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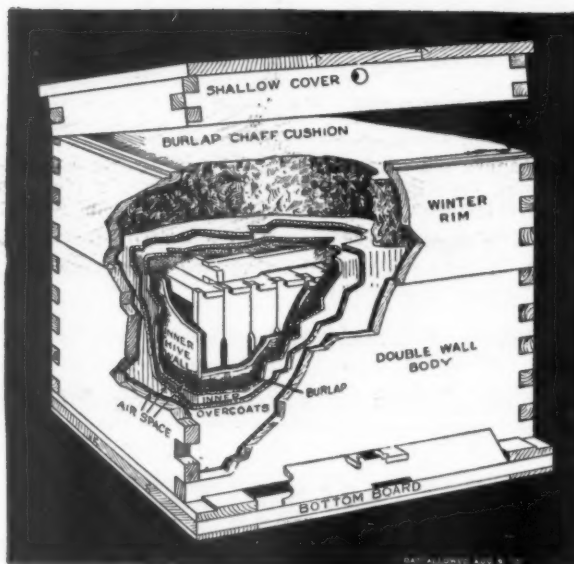
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American Bee Journal, Hamilton, Ill.

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VOL. LVIII—NO. 10

HAMILTON, ILL., OCTOBER, 1918

MONTHLY, \$1.00 A YEAR

NOTES ON ASTERS AS SOURCES OF NECTAR

Items of Interest About a Widely Distributed Family of Late Blooming Plants of Great Value to the Beekeeper

BY FRANK C. PELLETT

THE aster family is very widely distributed, being common in Europe, Asia and South Africa, as well as America. There are more than 200 recognized species, of which at least 125 are found in the United States. They are extremely common in the eastern and southern States, although some kinds are to be found in every State in the union, and from Canada to Mexico. Every American beekeeper may be sure that his bees are within reach of at least one species of aster, and, in most localities, there are several species. Some species produce nectar much more abundantly than others, and it is probable that the flow from all kinds is more or less affected by soil or climatic conditions. So few beekeepers differentiate between the species that it is very difficult to secure satisfactory information regarding their comparative value.

Asters are very seldom mentioned as sources of nectar in the southwest. Yet twenty-one species are listed as occurring in New Mexico. They seem to be of importance principally in the eastern States. There are numerous reports of honey from asters in the southeastern States of Georgia, Alabama and Mississippi, the amount of surplus increasing northward.

In most localities, the aster honey is mixed with that from goldenrod, and the two sources are usually spoken of together. In the September, 1917, issue of the American Bee Journal, appeared an extended article on goldenrods. Like the asters, they are of wide distribution, and, like them, they seem to produce nectar more abundantly in the moist climate of the eastern States. Both

bloom late in autumn, the crop often being cut short by frost.

According to Lovell, the asters are never common enough to yield a surplus in Maine, and the honey is always mixed with goldenrod.

As to the quality of the honey, there are many conflicting reports. Many reports are to the effect that the quality is poor and not suitable for table use. The fact that the honey is seldom unmixed with that of other fall flowers, may be responsible for

this impression. C. P. Dadant had one year, in Illinois, a crop of about six barrels which was almost pure aster honey. This honey was secured late in the season, after other plants had ceased to yield, and was almost white and of very fine quality.

There are numerous reports that a strong odor is apparent in the apiary when asters are yielding. We quote some of these:

"We had a fall flow from wild asters that filled the hives with honey for wintering and gave a few gallons of extracted honey. The honey is of good color and weight, but rather strong for table use. It also granulates very quickly. When the bees are gathering this honey the hives give off a rank and somewhat sickening odor, which can be detected for quite a distance away. * * * This odor disappears as the honey ripens and the flow ceases, but the strong taste never entirely disappears. It is as strong as basswood and not nearly so pleasant."

D. E. Andrews, Bloomington, Ind., page 98, American Bee Journal, 1907.

"The odor is not unpleasant, but is very noticeable when the bees are bringing much of it in, and it can be distinguished a considerable distance from the hives. The amount of 'smell' is such a good criterion as to the amount of honey that one can tell the quantity he is getting from these indications alone."

W. H. Reed, Herrodsburg, Ky., Page 228, Gleanings, 1911.

"In the Shenandoah valley in Virginia, where I lived for fourteen years, there were many



Fig. 1.—Arrow leaf aster. *Aster sagittifolius*.

acres of white aster. There were several years when the bloom was in sheets, affording a good yield of surplus. The honey was very light amber, of fine quality and was considered next to white clover. At such times a strong odor, which was distinctly sour, could be noticed."

Burdett Hassett. Page 257, *Gleanings*, 1911.

Much has been written concerning the danger of aster honey for winter stores. So many reports of disastrous results from wintering on aster honey have been published, that it is generally understood not to be safe for winter stores. However, it is probable that the trouble comes from honey gathered too late to be properly ripened, rather than because the honey is of poor quality. The fact that the honey granulates readily also probably accounts for the trouble in some cases.

In some localities, asters seem to be a dependable source of surplus, while in others they yield in appre-

ciable quantity only in rare seasons. Kentucky seems to be in the heart of the territory where asters are important. The following are typical reports:

"We have never failed to get a good crop of surplus honey, and plenty left for the bees, from aster for more than twenty years, till this year."

H. C. Clemons, Boyd, Ky. Page 90, *Gleanings*, 1909.

"In this section the asters are invaluable as fall forage for bees. Let the season be cold or hot, we are certain to have a continuous bloom from early in September until a really hard frost occurs. My Italian bees have never failed to secure enough honey from asters to carry them through the winter, even when there was hardly a pound of honey in the hives at the end of August."

Daniel M. Worthington, Elkridge, Md. *American Bee Journal*, page 125, 1869.)

"Blue aster, *aster azureus*,

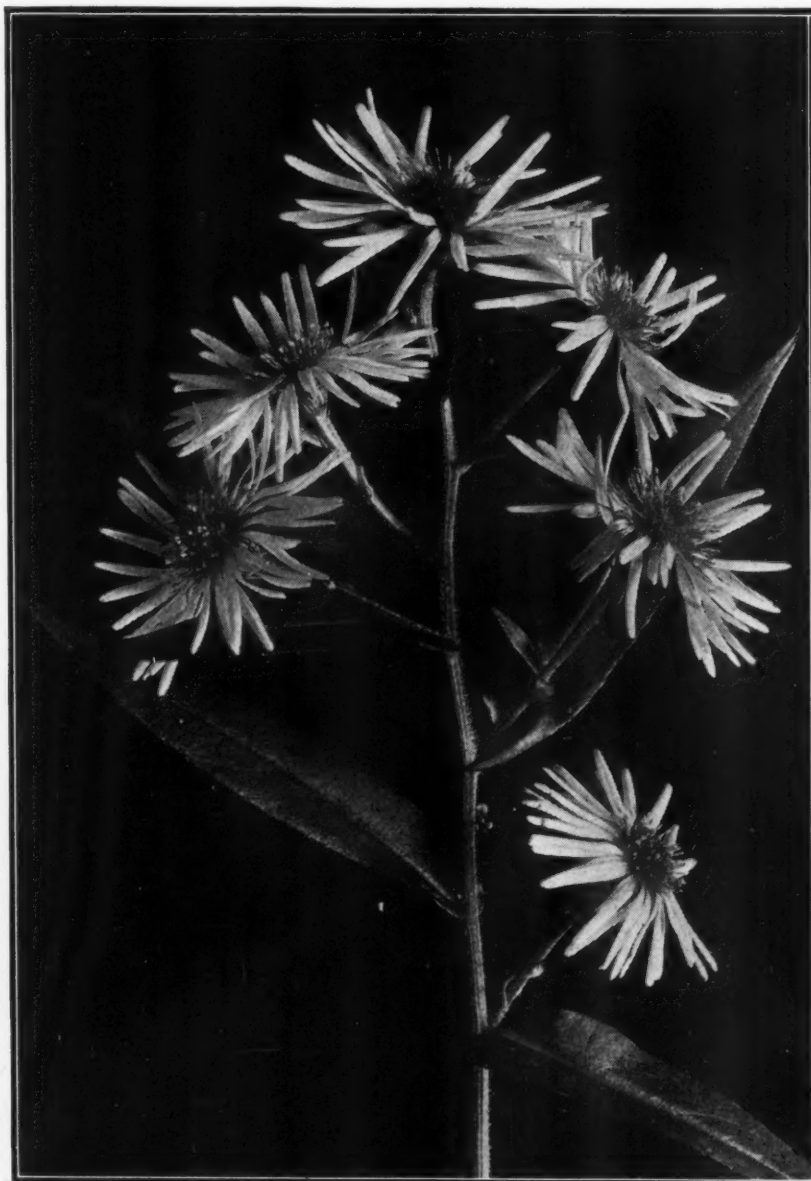


Fig. 2.—Purple-stemmed aster. *Aster puniceus*. (Photo by John H. Lovell.)



Fig. 4.—Swamp aster. *Aster acuminatus*. (Photo by Lovell.)

known among farmers as blue devil or stickweed, in my judgment is one of the best we have, from the fact that it produces honey in the fall of the year. It is usually in full bloom until about the middle of October, and if the weather is warm enough for the bees to fly they get plenty of honey to winter on from this flower."

West Virginia. Page 869, *American Bee Journal*, 1906.

It is probable that most of the species are of more or less value for honey under favorable conditions. The writer has seen bees working on arrow-leaf aster, *aster sagittifolius*, on sunny days in Cass County, Iowa, the first week in November, after everything else had been killed by frost. Figure 1 shows this species, which occurs in dry, open woods, from New Brunswick to Ontario, and west to Dakota, and from New York to the Ohio valley, and along the mountains to Georgia and Alabama.

Generally speaking, the small-flowered species with willow-shaped leaves, are best for honey. *Aster Tradescanti* is probably first in the list as a source of surplus. It is found from Ontario to Saskatchewan, and throughout the States east of the Mississippi, south to the gulf States. *Aster salicifolius* is probably one of the best in Iowa and Illinois, being common on low ground.

In a private letter, F. W. L. Sladen writes concerning the asters in Canada, as follows:

"I have this year had confirmation that *Aster cordifolius* is a useful source of surplus honey in favorable seasons in the Gattineau valley in September. During a period of very fine weather between September 11 and 22, a crop of 12,000 pounds of honey, principally from this source, and from the late flowering species of goldenrod, was obtained by Joseph Martineau at Montcerf,



Fig. 5.—Large-leaved aster. *Aster macrophyllus*. (Photo by Lovell.)

Quebec, from 300 colonies. The honey was light amber color, and a pleasant flavor, and not unwholesome for wintering, not granulating in the combs. (See experimental Farms report 1914-15, page 996). Other valuable species of aster in Canada for honey production are *A. lateriflorus* (Maritime provinces to Ontario): *Aster umbellatus* (Maritime provinces to Eastern Manitoba), and *Aster puniceus*, Fig. 2 (Maritime provinces to Ontario.)" Ottawa, October 2, 1917.

Aster puniceus, the purple-stemmed aster, Fig. 2, is found from Nova Scotia to the Rocky Mountains and south to Northern Alabama. It is one of the most attractive of the asters, growing on wet land and in the borders of swamps. Lovell writes that in Maine he has seen the bees on this species in large numbers on September 17.

The white field aster or frost flower, *Aster vimineus*, Fig. 3, is common from Eastern Canada to Minnesota, and south to Arkansas and Florida. It grows in dry, open fields, along roadsides, and in waste places. It is a late bloomer, belonging to the group of field asters which are important for nectar. Some other species, however, yield more freely.

The swamp aster, *Aster acuminatus*, occurs on wet land, but as far as available information goes is not valuable for honey.

The large-leaved *Aster macrophyllus*, Fig. 5, is a northern species, found in open woodlands. Graenicher observed ninety-five species of insects on the flowers of this species in Wisconsin, which indicates nectar in abundance in that State.

Several other species are known to produce nectar freely, *A. multiflorus*, *A. lateriflorus*, *A. dumosus*, *A. paniculatus* and *A. vimineus* being reported from various localities. *A. ericoides* is reported as valuable in Missouri:

"There is an abundance of *Aster ericoides* now in full bloom. The bees are working on it more

vigorously than they have on white clover or any other bloom."

George E Wilkins, Wright County, Mo. Page 699, American Bee Journal, 1904.

So far we have been unable to find any records of surplus honey from asters west of the Missouri river.

Wintering Experience

By A. Coppin

LAST fall I had 160 colonies in 8-frame single-walled hives. I commenced packing them for winter in good time, putting them in clamps of either six or twelve hives.

My bees were in rows, one facing east and the other west, with about 4 feet of space between the rows, which gave me ample room to work with them.

When I got ready to pack them for the winter I moved each row back almost 2 feet, thus leaving them almost back to back, or, in other words, just enough space between the two rows to put in packing.

I then filled this space in with for-

est leaves and straw and covered them all in with the exception of the fronts, which were not protected.

I got 153 of the 160 packed before the big snow came, thus leaving 7 that were not packed, and as the snow staid with us practically all winter, these 7 were never taken care of.

Six of those 7 were in one-story hives, and the odd one was a two-story hive.

The result was as follows: The 6 in the one-story hives were dead this spring, while the two-story was alive.

From the 153 that were packed I lost 24, thus leaving 129 from what were packed, and one from what wasn't packed.

I talked with two other parties that have bees; one of these had 10 hives packed in one clump and reports them all alive.

The other party had 26 hives and did not pack them at all, and reports 20 dead.

While we had an unusually hard winter, I yet believe that it is better to either pack your bees or put them in a cellar.

Wenona, Ill.



Fig. 3.—White field aster. *Aster vimineus*. (Photo by Lovell.)

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language. Consolidated with The National Bee Journal in 1874.

Published monthly at Hamilton, Illinois.

Entered as second-class matter at the postoffice at Hamilton, Illinois.

SUBSCRIPTION RATES—In the United States and Mexico, \$1 per year; three years, \$2.50; five years, \$4. Canadian postage 15 cents, and other foreign countries 25 cents extra, per year.

All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

C. P. DADANT Editor
FRANK C. PELLETT Associate Editor
MAURICE G. DADANT Business Manager

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THE EDITOR'S VIEWPOINT

The Editorial Staff

Mr. Frank C. Pellett, who for the past two years, beginning March, 1916, has been staff correspondent of the Journal, is now with us in a more permanent capacity. He is our associate in the editing of the Journal. Mr. Pellett has been met by many of our readers, for he has attended numerous meetings of beekeepers. For those who have never met him, we will say that he has been State Inspector of Apiaries in Iowa, President of the State Association, Vice President of the National Association, author of "Productive Beekeeping," one of the leading modern bee-books, "Practical Queen Rearing," and of "Our Backdoor Neighbors," a delightful book of Nature study.

It is unnecessary to say more. Judge him by what he will do. We expect him to "make good" in his present position.

He is now settled with his family at Hamilton and his permanent address is at this office.

Beeswax Production

In another column our readers will find an account of experiments by Mr. D. A. Davis, at the University of Minnesota on the above subject. These experiments are interesting, but they still leave the matter of cost of wax in the indefinite condition we have always known. From the time of Martin John (Fribourg 1684) the man who is said to have first discovered that wax is a product of digestion, like milk, hundreds of experimenters have attempted to get at the actual cost of wax to the bees, in honey. The results have varied greatly, not only because of difference in food, warmth, condition of the bees and inaccuracies in the ex-

periments, but also probably because the amount of wax produced naturally by bees from a given quantity of food is as variable as the production of milk or of butter fat in animals.

But what is most important for our producers to know is the answer to the following question:

At what time of the honey crop is it most profitable to give the bees full combs or full sheets of comb foundation?

Some will reply without hesitancy: "At any time." But is not this wrong? W. Z. Hutchinson, a man who made his mark, as editor of the "Beekeepers' Review" and as author of "Advanced Bee Culture," testified to the fact that "in hiving swarms upon drawn combs, the loss was always so great that it seems like folly to repeat it." What explanation can we give for that experience?

That the building of combs by the bees is very expensive to them does not admit of a doubt. Those who have placed it at a low figure have always overlooked some factor which would have added greatly to the cost. But in the experience of Hutchinson, it is probable that the empty combs provided to the bees of a swarm at the height of the honey crop were filled with honey so quickly that the queen was actually deprived of breeding room, while in the delay caused by comb-building the queen would have had time to fill them with brood as fast as they were built.

This subject, mentioned by us in paragraph 425 of the Langstroth-Dadant "Hive and Honey Bee," brought us the following judicious

remarks from Mr. Oscar Ritland, of Elroy, Wisconsin:

"I should like to make a suggestion in regard to your excellent book, Langstroth Revised. In paragraph 425 you mention what Mr. Hutchinson says about hiving swarms upon drawn combs, but you have failed to say that he was talking about comb honey. This, in my opinion, explains why he found it to be a loss to hive a swarm on drawn combs.

"If you hive a strong swarm, in a good flow, in a hive full of drawn combs and give it one or two supers of sections with foundation at the same time, I suppose that in most cases the bees will jam the brood chamber full of honey before the queen can get a start, and the result would be as Mr. Hutchinson stated. But if you hive a swarm, in a good honey flow, on a hive full of drawn combs and give them also one or two supers full of drawn combs, you would not expect that the bees would crowd the queen so that the swarm would decline in strength, would you?"

It seems to us that this suggestion solves the matter, but it is advisable for each beekeeper to understand fully the possible advantages and disadvantages of comb supply. There are times when the hiving of swarms upon full combs gives the bees opportunity to breed promptly, in the early part of the season, if the crop does not come in too fast, and perhaps double their capacity for increase before the end of the crop. There are also times, near the end of a crop, when the supplying of empty combs or comb foundation may be the saving of the swarm, since a scanty supply of harvest might be entirely inadequate for the building of the combs but would prove ample to sustain the colony till the next harvest.

These are questions for our college men to experiment upon. Practical apiarists who have neither the time nor the facilities for experimenting and keeping data will be glad of more tests, at different times, carefully recorded. But perhaps honey would give us a more correct result than sugar syrup, which was the food employed by Huber, Dumas and Milne-Edwards, by Professor Cook and dozens of others. Strange to say, sugar gave a greater percentage of wax than honey.

Gundelach, Berlepsch and others were also convinced by their tests

that more wax could be produced from a given amount of food when pollen was available than when it was not to be had. This is not because of the use of pollen in the actual production of wax, but because pollen appears necessary to sustain the bees during wax production.

Now that most of our colleges have experimental departments and practical apiarists, we should, before long, have some very useful information on the most profitable use of already-built combs and comb foundation. Will Mr. Davis and others make further experiments on the lines we indicate?

The Sugar Situation

There are many localities where the bees will not have sufficient honey for winter without feeding. Fortunately, the Food Administration has seen fit to provide for this emergency by making provision to supply the needs of the beekeepers. By the time this issue reaches our readers bees should be prepared for winter in northern localities, although it will not be too late to feed needy colonies.

Beekeepers who have harvested a crop of honey should in no case apply for sugar to feed the bees. The fact that beekeepers who have honey for sale find it necessary to buy sugar will certainly tend to throw suspicion on the craft. The publicity that has necessarily come in connection with the provision for supplying beekeepers with sugar to save their bees, has already created a suspicion in many minds that bees are fed with sugar for the purpose of making honey for sale. American beekeepers as a class are patriotic and are prepared to make any necessary sacrifice to win the war. It is reported, however, that a few individuals who have harvested a crop are disposed to take advantage of the general situation and extract all their honey for sale and feed the bees with sugar for winter. Such action would be very unfortunate, for it might result in the supply of sugar, necessary to feed needy colonies, being withdrawn by the Food Administration on a misimpression. It might also result in the prosecution of the guilty beekeeper, for the public is in no mood now, when every nerve is being strained to win the war, to trifle with those who turn national necessity to private profit.

The Government has met every reasonable demand of the beekeepers and it is important for the good of the industry that every violation of the rules be reported.

Sugar Versus Honey

We are informed that the Food Administration is allowing 100% of needed sugar for feeding bees that may be short for winter and 50% per cent of normal supply for "honey manufacture." Inasmuch as the adulteration of food is strictly prohibited, we can see no earthly reason for allowing any sugar for artificially manufacturing a product which cannot under any excuse be called honey, even if it contains 50% of real honey. There is evidently a misapprehension on the part of the Food Administration as to what constitutes honey.

Several of our beekeepers have written us that they find great opposition among consumers to the permitting of sugar being used in any quantity whatever to feed bees. Evidently the public is unable to discriminate between bee feeding and honey adulteration. We are writing this article for the purpose of helping the beekeepers in making the matter clear to the consumer.

Pure honey is the product of flowers only. When the flowers are wanting, or when they contain no nectar, owing to drought, excessive moisture, etc., the bees are sometimes unable to secure enough honey to carry them over winter. At least 25 pounds of honey is necessary for the purpose. Neither molasses, nor commercial glucose, nor corn syrup, can be used, as they are either rejected by the bees or, if used by them, make them sick and bring about the death of the colony. Pure cane sugar, diluted with half of its weight of water is the only possible substitute for honey. So when the bees are short of stores, as they are in many places during the present season, sugar syrup is indispensable to keep them alive.

Do beekeepers feed bees sugar to make honey? They do not, for two reasons. The first is that sugar syrup fed to the bees is still sugar syrup. Its chemical condition is not changed and it lacks the flavor, the essential oils which the flowers alone can give. A man feeding his bees sugar syrup and trying to sell it as honey would be liable to arrest for adulteration.

The second reason why sugar is not fed to bees for profit is that when it is used in large quantities as bee feed, there is a large consumption of it by the bees to build comb and to rear brood. This is highly unprofitable. Experiments conducted at different times, for a century past, one of which is published in the current number of the American Bee Journal, show that if the bees use any sugar syrup for this purpose, it costs them from 16 to 25 pounds of sugar for every pound of comb secured. Feeding to keep bees from starving allows them only to fill the combs already built and the feeding does not last long enough to induce them to breed to any extent or to build additional combs. But a plentiful feeding, such as would be necessary to secure a surplus, would induce them to rear brood and to build additional combs, seal the cells, etc. This would more than balance the difference in price.

It is, therefore, neither profitable, nor honest, nor safe, to feed bees in order to get honey for sale. The adulterer has a shorter method of mixing honey and syrup without the help of the bees. This is forbidden by law. No food product may be sold under any but its real name.

California and the Western Honey Bee.

We read in the "Western Honey Bee" that, according to Mr. Geo. S. Demuth, of the Washington Bureau of Entomology, California has now about two million colonies of bees, producing about a thousand carloads of honey annually. The beekeepers of California who have been having hard sailing in years past, when honey sold, at times, as low as 3 cents per pound, ought to have smooth sailing for some time to come.

And, by the way, we should urge the California honey producer to read the "Western Honey Bee." It is a neat little magazine, well managed and interesting. J. D. Bixby, its editor, will make a valuable paper of it, and he is not paying us for saying that, either.

New Bulletins on Wintering

Two new bulletins are just now issued by the U. S. Department of Agriculture, Farmers' Bulletin 1012, "The Preparation of Bees for Outdoor Wintering and," and 1014, "Wintering Bees in Cellars." Write the Secretary of Agriculture at Washington for either of these bulletins.

THE TEXAS QUEEN AND PACKAGE BUSINESS

The Fourth Article of a Series Dealing With Beekeeping Conditions in the Lone Star State

IN order to appreciate the problems of the queen breeders who supply early orders for bees and queens, one must know something of the vagaries of the Texas climate. While there are sections of Texas that are hilly or mountainous, and also sections covered with forest, for the most part the State is a monotonous level stretch of prairie. Prairie countries are very sensitive to changes in weather conditions, and Texas is no exception to this rule. The southern part of the State is covered with a sparse growth of low-growing, thorny shrubs and small trees, which break the force of the wind to some extent, but which give scant protection as compared to the dense forests of other regions.

The climate is generally mild, on account of the southern situation, but the wind sweeping down across the plains carries the cold and chill of the "northers" clear across the State to the Mexican border. In winter and early spring, a warm and balmy day will often be followed by a "norther" and a raw wind, that chills one to the bone. As in other sections, the weather of spring varies greatly from year to year. In some seasons, bees breed up early and with no apparent setback. In other seasons, "northers" are of such frequent occurrence that the beekeeper finds it difficult to get his colonies in shape for early queen-breeding. The farther south one goes, the more favorable the conditions become, un-

til in the lower Rio Grande valley we find, perhaps, the most favorable conditions for queen-breeding in the United States. Even here the influence of the "norther" is felt, although it seldom brings frost.

In traveling from Dallas to Brownsville, even though one is all the time in Texas, he traverses a greater distance than in traveling from Chicago, Ill., to Nashville, Tenn. One finds it hard to describe Texas conditions generally, because of the great variation in the different sections. This variation was touched upon in detail in the June issue.

The southern breeder has a great advantage over the man farther north, because of his longer season. It is the early orders that bring the higher prices, and which are filled at the best profit. As the season advances, prices tend to drop, until in the late summer there is little margin to the queen-breeder at the prices at which the queens are sold. The man who is prepared to fill orders in April and May finds an unlimited market at profitable prices, for either queens or bees in packages. Although the writer has visited a number of the larger shippers in Alabama, Georgia, Mississippi and Texas, nowhere has he found one who does not experience great difficulty in getting his bees up to the required strength to meet this early trade, except in the lower Rio Grande Valley.

Callallen, Texas, is farther south

than any portion of any other State except a part of Florida. The northern beekeeper would expect to find no winter problem there. Yet E. B. Ault, who is extensively engaged in shipping bees and queens, is experimenting with various kinds of winter protection in order to get his bees into prime condition as early in spring as possible. The writer was informed that the bees build up without extra protection in plenty of time for the honey-flow, but too slowly for best results in queen-rearing. Two pictures are shown herewith, illustrating Mr. Ault's methods of wintering. In one picture a row of hives is protected with a bank of dirt thrown up about the hives, and held in place with boards. The entrances are open in the same way as in the usual packing cases used in the north. This plan would not be advisable in a locality where rains are frequent, as the dirt would soon become saturated. The tar paper cases shown in the other picture apparently give as good results, and are much more easily and quickly prepared. The hive is not so easily opened with this case. The protected colonies build up about two weeks earlier than the unprotected ones, in spring, and save some honey in wintering. At first glance, we find here a strong argument for protection to all bees, even in this far southern climate. However, the beekeepers say otherwise, contending that the bees build up in time for the honey-flows anyway, and if they reach maximum strength two weeks early they will have the swarming fever and consume more stores in excessive brood-rearing, than will be saved in wintering.

At Sabinal, W. E. Edwards has twenty colonies in double-walled hives. He inclines to the belief that the extra protection with him is a decided advantage, and says that if it were not for the extra cost he would have all his bees in double-walled hives.

Whatever may be the case for honey production, there can be no question that anything the queen-breeder can do to hasten the early brood-rearing and save bees in spring, is decidedly to his advantage. The two weeks which Mr. Ault has been able to gain in building up is of great value at that early season, and enables him to supply numerous orders which would be otherwise impossible.

In some parts of North Central Texas, the first important surplus flow comes from cotton, about the 20th of June. In these localities, the control of swarming is a problem since the swarming season comes in April, nearly two months ahead of the honeyflow. Wherever there are



T. W. Burleson sells his surplus bees in packages in advance of the honeyflow.



Ault's spring protection for cell-building colonies in South Texas.

dependable flows, the production of honey is usually considered more profitable than either queen-breeding or the package business. Some of the most extensive queen-breeders in America would be producing honey, if the honeyflows in the places where they live were heavy and dependable enough to give profitable crops. In this North Texas country the early package business offers a solution of the swarming problem. If the bees are allowed to continue excess breeding for two months ahead of the honeyflow, large quantities of honey are consumed in rearing useless brood, and much manipulation is necessary on the part of the beekeeper to control the swarms. T. W. Burleson, of Waxahachie, is a large honey producer, having 750 colonies of bees. He has found that by selling bees to the early trade he can turn his excess bees to profit early in the season, and still give the bees plenty of time to build up for the honeyflow from cotton.

There are not many localities where the selling of bees and the production of honey can be combined to as good advantage. Where it can be done, it furnishes the ideal condition for profitable beekeeping. The bees are sold in early spring, at the time when prices rule highest, and the marketing of the honey crop, which comes on later, gives the beekeeper a long season with a dependable income. Mr. Burleson is of the opinion that one of the secrets of success, in shipping bees, is to gorge them before delivering the package to the express company. If given all the syrup which they will take, in advance of shipment, the bees cluster much more quietly and go through in better condition. A common way of feeding is to spread the syrup over the screen of the cage with a wide brush.

There are numerous queen-breeders in Texas, and each locality presents conditions peculiar to itself. The writer was not able to visit as

many of the queen yards as he wished, because the time available for the trip was not sufficient. In some important honey-producing sections of Texas, commercial queen-rearing is not profitable because of a shortage of pollen at some seasons of the year. This and other locality peculiarities will be considered further in later articles.

Co-Operation Brought Higher Prices

By Chilton Gano

BEEKEEPERS of the Northwest — Idaho and Oregon — have proved that successful co-operative selling of honey need not be confined to Colorado and Texas. The story of the Idaho-Oregon Honey Producers' Association has been one of financial success from the first

season, 1915. To indicate at the start the scope of this success it may be stated that in 1914 Northwestern extracted honey was selling as low as 5 cents, whereas this season the association's minimum price is 18 cents. This advance cannot, of course, be attributed entirely to the association. Advances in production cost due to the war, and the scarcity of sugar have had much to do with it. But an account of the association's history will show that the present prosperity of the Northwest beekeepers is due in part to organization.

The present organization is an outgrowth of the Southern Idaho-Eastern Oregon Beekeepers' Association, which was a social organization. Prior to 1914 members of the organization had from time to time bunched supply orders, or occasionally combined to make up a car of honey for shipment to the coast; but such actions were not included in the association's functions.

In December, 1914, the time seemed ripe for adopting a definite plan for co-operative buying of supplies and selling of honey. A meeting was held and the result was the incorporation of the Idaho-Oregon Honey Producers' Association. The association was to buy supplies of all kinds, bunching all members' orders, and to market all the honey of its members, withholding 5 per cent of gross sales to cover expenses and returning any surplus from this amount to the producers at the end of each season. Prices were to be determined by public discussion at the Annual Field Meeting, held in July of each year, a schedule being determined on for the three grades of comb honey. Producers of extracted, however, were to be allowed to set their own prices. The association was to endeavor to secure the schedule prices, but was empowered to sell at market price whenever it appeared advisable.

Big Savings in Supplies

First, as regards purchasing of



Hives protected with earth in Ault's yards. This would not do in a wet climate.

supplies, the contract signed by the members accords, among other privileges, that of buying supplies through the Association and deferring payment until crops are sold in the fall of the same season.

This is quite an advantage, in itself, but the actual saving through quantity buying has been great. Before the organization of the association, producers purchased from Pacific Coast and Colorado dealers, paying retail catalog prices and local freight to destination. The association, through assembling of orders, is now able to buy at jobbers' list, and goods are shipped in car lots, taking a reduced freight rate. As some of the individual orders of members runs as high as \$1,000, it can be realized what jobbers' list prices, ranging from 20 to 33.1-3 per cent below retail, means in money saving.

Higher Prices

Before the new plan was adopted extracted honey was selling as low as 5 cents in the Northwest, while comb sold as low as \$2.25 per case. This was, partly at least, because competition between producers forced the price down. Elimination of this competition between members resulted in the association securing for the entire crop in 1915, the first season, \$2.75 per case for No. 1, and \$2.50 for No. 2; whereas, individual producers in the district sold as low as \$2.50 and \$2.25. One large individual producer succeeded in getting \$2.65 and \$2.40. In the same season a producer of extracted carried over a full car, which he was unable to move. In the spring of 1916 he commissioned the association to sell it for him and they did so within one week, securing one-quarter cent per pound higher than the price he had set.

In the meantime the association's work for improving production and pack was progressing, and in 1917 a new grade of comb honey, "Fancy," was added. In that season cars were sold as high as \$3.50, \$3.25 and \$3 for the three grades—fancy, No. 1 and No. 2. Others sold at \$3.25, \$3 and \$2.75. Individual producers sold at around \$3,—\$2.75 for two grades.

One coast buyer bought a car from the association in July at \$3.15, \$2.75 net, f. o. b. Caldwell, Idaho, and the following month paid an individual producer \$3 and \$2.60, besides charging him 10 cents per case brokerage for selling to themselves.

In the same season extracted was sold, first cars, at 12½ cents, thence on up to 15 cents, by the association. Individuals sold large lots at 10 cents, and some as low as 8 cents. An association member agreed to sell one car through the association at 8 cents, but the association advised holding it, and later got 12½ cents for it.

The present season the price schedule calls for 18 cents for extracted and \$4.50-\$4.25-\$4.00 for comb. These are minimum prices, and the association actually refused \$5.00-\$4.50 for 10 cars and later got \$5.50-\$5.00. Since then a deal has been closed at \$6.00-

\$5.50, which will take up the balance of the comb. Individual producers began selling at the association's schedule of \$4.50-\$4.00, but have asked higher prices since they learned the association was getting them.

Equally fine have been extracted sales. With a minimum of 18 cents, the association actually refused 20 cents for its entire crop, and is now selling in 5-gallon cans at 22½ cents. Individual producers started selling at 18 cents, but in this case, also, have raised their prices.

"If this association had not been in existence this season," says its secretary, P. S. Farrell, "coast jobbers would have made a killing on our honey this season, because only one or two producers were really posted on market conditions." One great secret of the association's success is that, handling so large a crop, it can well afford to investigate the national honey market thoroughly.

Low Operating Cost

Not the least of this association's financial triumphs is its low operating cost. It withholds only 5 per cent on gross sales, and has never yet needed the entire amount for expenses. In 1915 it operated for only five-thirteenths of its commission, repaying to the producers the remaining eight-thirteenths. In 1916, due to a partial crop failure, expenses were higher, approximating 4 per cent. In 1917 they were 3½ per cent.

The association now has 146 members, located in the Boise and Payette Valleys in Idaho, and in the Malheur River Valley in Oregon.

The members are grouped into seven districts, and each district elects a Director to the Board of Directors. There are fifteen loading points from which honey is shipped, but cars of supplies are unloaded at two points—Caldwell, Idaho, and Ontario, Ore., reshipment being made direct to members.

Among the interesting provisions in the membership contract are the following:

1. That members must ship their entire crops through the association for 5 years from date of contract.

2. The selling prices shall be fixed by the directors, following public discussion, and the association shall obtain higher prices when possible.

3. That the association can refuse to accept honey from a member which is not properly graded and packed according to the association's grading rules.

4. That if a member fails to sell through the association, the association can take possession of his crop, and retain for selling it, in addition to the 5 per cent, any additional amount to cover the extra expense of this procedure.

5. That a member who actually sells any honey outside shall pay to the association, in lieu of liquidated damages, 5 per cent of the gross of such sales.

It is, of course, true that the success of such an organization depends largely on the business ability of its officers and secretary, yet that such managers need to be more than ordinarily good business men is not

indicated by the records. Such associations have had notable successes right from the start, in at least three States, which indicates that practically any average American community should be able to command the services of a manager and officers of sufficient ability to insure the success of such an undertaking.

The Production of Wax by Honey Bees

By D. A. Davis

THE subject of Wax Production by the Honey Bee is one upon which theories are numerous. Some of the well-established facts about this subject are:

1. That a new swarm or shaken swarm of bees will make wax and build comb immediately after entering the new box or hive, if this box or hive does not already contain combs.

2. That the wax is secreted by the wax glands, which lie in pairs, usually four pairs, on the ventral interior side of the abdomen of the worker-bee. The wax being secreted oozes out through the minute perforations of the wax plates, which cover the separate wax glands. Upon coming in contact with the air the liquid wax hardens into a pearly white scale. (1) gives a good description of the wax organs and their functions.

"As is well known, wax is produced by the worker-bees only. The location of the wax-secreting surfaces, or wax plates, may be readily determined by an examination of the ventral surface of a bee's abdomen. By stretching the abdomen somewhat it will be seen that each of the last four visible sternal or ventral plates is divided into two regions, a posterior projecting edge which is distinctly hairy, and a smooth anterior half which is usually covered by the next preceding plate. This anterior region is divided by a median ridge into two distinct irregularly oval areas, which thus lie on either side of the mid-ventral line. These areas are the wax plates, and upon them the wax-scales are formed. Each one of the last four sternal plates bears two wax plates, making eight in all. (See Fig. 1.)

"The glands which secrete the wax lie on the floor of the abdomen immediately above and in contact with the wax plates, and their secretion is deposited upon the external surfaces of the plates. Upon coming in contact with the air the fluid wax hardens, forming a covering over the entire outer surface of the plate, which gradually increases in thickness with the addition of wax through the pores. In this way the wax-scales are produced, and since they are molded upon the surfaces of the eight wax plates, they cor-

(1) Casteel Ph. D., D. B. 1912—The Manipulation of the Wax Scales of the Honey Bee.

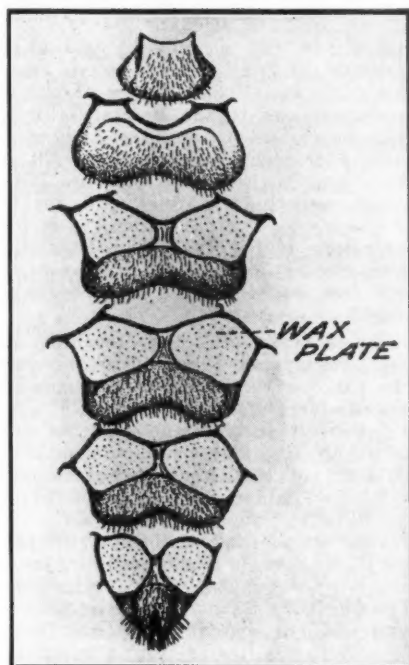


Fig. 1.—Wax plates of the worker bee. (Casteel.)

respond to them in number and in form.

"In its natural position each wax scale lies between its wax plate and the overlapping edge of the next preceding sternal plate. The scale thus fits into a little crevice or wax pocket and is well protected from injury. If the bee extends its abdomen the rear edges of the scales can be seen protruding from their pockets, or if the scales become very thick they will push the covering plates outward and will project from the pockets." (See Fig. 2.)

3. That worker-bees gorge themselves with honey before beginning the process of wax secretion.

4. That worker-bees cluster together in dense masses while secreting wax, evidently to generate sufficient heat for the secretion of the wax and formation of the scales.

The foregoing facts are well known, but there has been much speculation on the amount of honey or sugar that is used up in the metabolic process of wax secretion. Various writers have estimated that all the way from 5 lbs. to 40 lbs. of honey is used in the production of one pound of wax.

The experiments carried on during the past fall have disclosed the following facts:

1. It requires more pounds of sugar for old worker-bees to produce a pound of wax than for worker-bees of average age.

2. Young worker-bees can produce wax more economically than old worker-bees or worker-bees of mixed ages, such as found in the average colony.

3. The average colony, without exceptionally good weather conditions in the way of temperature, will consume on the average 16 pounds 9

ounces of sugar in secreting 1 pound of wax.

4. With beeswax selling at 40 cents per pound, that figure is only one-third the cost of its production. With sugar at 8 cents beeswax should sell at \$1.25 per pound or even higher, since honey is the food which is ordinarily used in its production and honey is always higher than sugar in price.

The following is a statement of the experiment and the data obtained, with the resulting tables derived therefrom and used in the final conclusions:

On September 17, 1917, five colonies of bees were shaken upon full sheets of medium brood-comb foundation in hives which did not contain a single drop of honey. The only wax which was present was that amount used in the foundation.

Colonies Nos. 1, 3 and 5 were average colonies with about equal portions of young, old and medium-aged worker-bees.

Colony No. 2 had a very large percentage of young worker-bees, that is, bees which had emerged within the past two weeks.

Colony No. 4 was composed mostly of old worker-bees, bees as old as six weeks or two months, very few young, newly-emerged bees.

Each colony was weighed at the beginning and end of the experiment, as were three other colonies of about the same strength, in the same location, which were not being experimented upon.

A sugar syrup, made of four parts, by weight, of pure granulated sugar and three parts, by weight, of cold water, was prepared and fed regularly, as fast as the bees could take it.

The colonies not fed or disturbed were found to have lost an average of 3 pounds and 3 ounces during the twenty-five days that the experiment was carried on. Since they raised during that time approximately as much brood as did the colonies un-

der test, the figure 3 pounds and 3 ounces of honey was used in computing the amount consumed by the bees and fed to their brood while the test was going on. This amount of honey was reduced to a sugar basis, since honey is only 80 per cent sugar.

After the feeding experiment was over, some of the representative combs were extracted and the combs melted up to find out exactly the amount of wax which had been added to the two-ounce sheets of foundation, as well as to find out the water content of the inverted sugar syrup. The fact that the sugar syrup had been reduced to the same water content as honey in spite of the coolness of the season, was a notable fact. In the wax production it was found that it was necessary for the bees to add an average of one ounce of wax per frame to the two-ounce foundation sheets, in order to build the comb out even with the end bars. However, it is very evident that more and more wax is added to these combs year by year as they are being used.

These figures would vary in the spring or summer when the weather conditions would be ideal for the activities of the bee and the natural building of comb.

Table No. 1.

Weight after shaking on full sheets of foundation. Weight of bees and hives before feeding:

Colony 1	33 lbs. 6 oz.
Colony 2	31 lbs. 13 oz.
Colony 3	30 lbs. 3 oz.
Colony 4	24 lbs.
Colony 5	28 lbs. 1 oz.

Table No. 2.

Syrup fed, 4.3 mixture. Therefore, 7 lbs. syrup equals 4 lbs. sugar. Weight of sugar syrup only, which was fed:

Colony 1	41 lbs. 1 oz.
Colony 2	41 lbs. 1 oz.
Colony 3	36 lbs. 8 oz.
Colony 4	41 lbs. 1 oz.
Colony 5	41 lbs. 1 oz.

Table No. 3.

Final weights of colonies which were fed, at end of period of twenty-five days:

Colony 1	51 lbs. 10 oz.
Colony 2	50 lbs. 15 oz.
Colony 3	45 lbs. 8 oz.
Colony 4	41 lbs. 9 oz.



Fig. 2.—Ventral caudal view of abdomen of worker bees, showing wax scales between the wax plates and abdominal segments. Also some scales removed from the bee. (Original.)

Colony 5 44 lbs. 12 oz.

Table No. 4.

Net gain per colony.
Net weight of evaporated and inverted sugar syrup which was stored during the period:

Colony 1	18 lbs. 4 oz.
Colony 2	19 lbs. 2 oz.
Colony 3	15 lbs. 5 oz.
Colony 4	17 lbs. 9 oz.
Colony 5	16 lbs. 11 oz.

Table No. 5.

Number of pounds of honey for maintenance added to the gain in weight. That is, net gain plus 3 pounds 3 ounces.
Total weight of stored syrup plus the amount used by the colony during the twenty-five days:

Colony 1	21 lbs. 7 oz.
Colony 2	22 lbs. 5 oz.
Colony 3	18 lbs. 8 oz.
Colony 4	20 lbs. 12 oz.
Colony 5	19 lbs. 14 oz.

Table No. 6.

Number of pounds of dry sugar fed in the form of syrup:

Colony 1	23 lbs. 7 3-7 oz.
Colony 2	23 lbs. 7 3-7 oz.
Colony 3	20 lbs. 14 1-4 oz.
Colony 4	23 lbs. 7 3-7 oz.
Colony 5	23 lbs. 7 3-7 oz.

Table No. 7.

Number of pounds dry sugar equivalent stored in combs and used by colony, considering the difference in consistency of syrup at the time of feeding and after the syrup was stored:

Colony 1	17 lbs. 5 oz.
Colony 2	17 lbs. 13 3-5 oz.
Colony 3	14 lbs. 12 4-5 oz.
Colony 4	16 lbs. 9 3-5 oz.
Colony 5	15 lbs. 14 2-5 oz.

Table No. 8.

Number of combs built fully out during feeding period from the foundation furnished:

Colony 1	6
Colony 2	7
Colony 3	6
Colony 4	5½
Colony 5	7

Table No. 9.

Number of pounds of sugar required to produce one pound of wax:

Colony 1	16 lbs. 7 oz.
Colony 2	12 lbs. 14 oz.
Colony 3	16 lbs. 4 oz.
Colony 4	20 lbs.
Colony 5	17 lbs. 5 oz.
Average	16 lbs. 9 oz.

From table No. 1 you will notice that the initial weights of the colonies after shaking upon foundation

vary greatly. This variation is due to the different sizes of hives, instead of the difference in number of bees.

Ontario, Iowa.

A Valuable Pest---To Beemen

By C. D. Stuart

"IS the Yellow Star or Russian Thistle a menace to Northern California?"

To decide the question, farmers from Butte, Tehama, Glenn and surrounding counties held a meeting December 2, 1916. The solemnity of the session presaged an affirmative answer, only a single dissenting voice being heard—the humble protest of some beeman, perhaps; but his identity is not revealed by official records of the proceedings.

Declared a pest and a menace, this nectar-secreting plant was condemned to death by fire, by water, by forceful removal from the soil and by burial. But at the end of the meeting in the late afternoon, the thistle still flourished, and to this day is obeying the ancient injunction to increase and multiply its kind, to the secret satisfaction of apiarists.

According to the report, the *Centaurea solstitialis*, or yellow star thistle, was discovered in Northern California about twenty-five years ago, only an occasional bunch growing at that time along a short-cut road through a hay field. About the same date other small plants were imported from Russia. (The report does not say for what purpose, or if they were brought in by accident.) One of the farmers at the meeting said: "It looks something like the saffron we had back east;" but later he concluded that it was "some kind of a weed," and paid no further attention to it.

In a few years the thistle had spread, and it became increasingly difficult to run a mowing machine through the "nail-heads," as one man called them. From the level grain land it spread to the foothills thirty miles away, and still further, the seed being carried by birds, in the wool of sheep and in the winds and rain. The overflowed land suffers the most. The seeds are carried down to it by the rivers, and in these rich soils the thistle often grows to a height of 6 or 8 feet and forms an impenetrable jungle.

The ordinary hoeing method of eradication was reported to be ineffectual, as the "root is a very determined root," and the thistle will adapt itself to the land—that is, lie on the ground like a burr clover and blossom and seed itself there. It can be plowed under periodically until it will finally disappear in highly cultivated fruit orchards, but it still retains its hold in fence corners and along the roadsides. One orchardist reported that he had removed all of his fencing in order to plow the thistle under, but it was only a temporary relief, as it still flourished in untilled fields and rocky foothills; others, that it had no effect on crops, as its growth is now confined to out-of-the-way places. A wool grower discovered that a herd of sheep will stamp out the thistle. They crop it down as fast as the tender shoots appear, so that it is not allowed to become hard and unfit for fodder, or to go to seed.

But all who own farms in Northern California are not wool growers, especially on land that is adapted to nuts and fruit.

And so the fight is on, and like other kinds of warfare, had its inception in money-making projects. A man of large holdings naturally opposes the eradication of thistle through individual effort, because it "would cost more than the land is worth." On the other hand, a man of small, intensively-cultivated holdings would be able to control the pest on his own land were it not for the seeds constantly supplied from the neglected fields of some absentee landlord. But all agree that it is going to be a man's job totally to eradicate the thistle, the large land-owner naturally advocating State appropriations to check its inroads; the small land owner objecting to such paternalism because of the increased taxation to those who are already coping more or less successfully with the situation.

Meanwhile, from one-half to three-fourths of Butte county's honey crop, averaging about 60 tons, is gathered from this pest, now said to be growing on two-thirds of the county's area. Should the thistle continue to spread, in spite of legislative appropriations, in defiance of the State University and of the Horticultural Commission, to say nothing of existing laws, Northern California will be compelled to "eat honey" or starve. There will be little else to eat, if the pro-eradication faction is to be taken seriously.



Yellow star thistle. *Centaurea solstitialis*.

Star thistle begins to bloom about the first of July and continues till frost, which usually comes between October 1 and November 1. The yield of nectar is slow but continuous; if it is stopped by too long drought, it will start yielding nectar again after a rain. The plant has the faculty of existing in arid soils for long periods of drought, and, when apparently dried up, it will start to grow and blossom after a rain. Some cattle growers find that thistle hay can be fed profitably when cut and dried like other hay, if it is moistened just before feeding. The dampening of the fodder takes the sting out of its leaves and blossoms.

Star thistle honey is heavy-bodied, white, almost as cloying in its sweetness as orange, and has a greenish yellow tinge, like olive oil. It is considered by large buyers equal in quality to any white honey in the State, and with the price at 2 cents a pound more than light amber honey of the alfalfa type, and still rising, beekeepers in Northern California should worry.

Chico, Calif.

Practical Queen Rearing

A Review by John Anderson, M. A.

MR PELLETT set himself to write a concise manual on the art and practice of queen rearing, and right well has he succeeded. He has done more than he promised in the preface; he has passed the grist through his own mill, has added the distinctive Pellett touch, and in the very limited space at his disposal has clearly indicated the principles underlying the various methods. The book is not therefore a catalogue of directions which must be followed in every detail or not at all. Each one can judge of the methods for himself and select those most suitable to his particular condition.

The illustrations are most helpful and many are of high artistic value. Securing that frontispiece of the queen, drone and worker, must have entailed much patient waiting before the desired grouping was obtained.

There are many little hints and devices which make for greater dexterity, smoothness, and success, in the various processes. When using the Miller method I used to trim up to the eggs according to instruction in a British book, but I rarely succeeded in getting cells on the edges of the comb. The writer of the book had forgotten that bees in a hurry select larvæ and not eggs for queen-making. Dr. Miller gives the necessary hint on page 56. The horse-hair spoon is a cute idea calculated to neutralize much clumsiness on the part of the operator. The grafting house is another valuable suggestion, and a great improvement on the kitchen. If thought advisable, the atmosphere in such a house could readily be given that degree of humidity which Signor Penna thinks so desirable.

Opinions may vary as to some of the theory on which certain practice is based. It is difficult, for example, to believe that food and space

during larval life make all the difference between a queen and a worker. If so much royal jelly, and so much cell space, develop in a worker pollen-combs or baskets of a certain size and complexity, one would expect that the larger queen-cell with unlimited royal jelly would produce still better pollen-combs. But the queen has no pollen-combs, no pollen-baskets, no wax glands, a smaller brain, weaker jaws, less perfectly developed eyes! If the queen were uniformly better developed than the worker we might be content with the food and space theory, but it obviously cannot explain such differential development.

The attempt to practically eliminate the drone is perhaps not entirely well advised. Although the drone is unfitted for the more familiar duties discharged by the worker, there are certain ancillary activities, or rather passivities, in which the drone may not be a negligible quantity. At night, when the important duty of ripening the honey is being performed, the burly drones must help considerably in keeping up the necessary temperature. On moderately cold days, when mating is impossible, but nectar is being gathered, the presence of the drones on the brood may release an equivalent number of workers. Some of us think that bees are more contented, work better, and are less likely to need queen excluders if a moderate quantity of drone-comb be permitted. This drone-comb should be placed at the sides in order that drones may not appear too early.

Mr. Pellett accepts the general view that the first virgin to emerge is accountable for the destruction of any other cells in the hive. This is not invariably the case. One or more cells may be destroyed before any queen is due to emerge; and I have seen every cell destroyed by the workers except the one which afterwards emitted the chosen virgin.

Are cells quite as delicate as some would have us believe, and is the orientation so very important as indicated on page 78? A cell which I carried on a motorcycle for four miles yielded a nice queen just a week later. I have seen naturally built cells horizontally placed, and I have been in the habit of placing cells in nuclei almost horizontally just under the quilt. This ensures their being kept warm, and enables one to see if the queen has emerged without the necessity of disturbing the combs. If cells must always be point downward we shall have to revise our practice.

The analysis of introduction methods is most illuminating, and probably sound, both as to theory and practice. It is a pity that Mr. Pellett did not specifically mention the Simmins method of direct introduction. It is as simple as any, and usually successful. Cheshire was delighted with a method by which he could have a queen laying in half a dozen hives in a week.

It is sometimes difficult to tell without waste of time whether a virgin is actually present in a hive, and

it is frequently recommended that one should place in the hive a comb with eggs and young larvæ to see whether cells will be formed. Hewitt is positive that the addition of any but sealed brood will make the bees ball the queen on her return from mating. Dr. Miller seems to be coming around to this view. (July Gleanings.)

The suggestion that queens may convey disease through heredity is most interesting. The experience of Poppleton with paralysis is particularly apt, since Britain is being depleted of bees by a disease something very like what troubled Poppleton. It is frequently stated that the queen is immune from Isle of Wight disease, and it is quite true that she almost invariably survives to the last, and seems not to die of the disease, but from want of attendants. I have in recent years repeatedly introduced such a surviving queen to a fresh stock, and the result has invariably been that sooner or later her offspring developed Isle of Wight disease. Indeed, so far as I am aware, this is the only artificial way of producing the disease.

The library of an intelligent beekeeper cannot be considered complete without a copy of "Practical Queen Rearing."

COLLEGE OF AGRICULTURE,

Aberdeen, Scotland.

(Mr. Anderson maintains the popular sentiment in favor of the usefulness of drones to keep the hive warm. In view of Dr. Brunnich's studies (September American Bee Journal), which show the drone to have a higher temperature than the worker, we might agree to this "ancillary" usefulness, were it not that drones have to be reared previously, often at a time when warmth is at a premium in the brood-combs; were it not also that whenever a return of cool weather decreases the flow of honey the drones are mercilessly destroyed, whether full grown or in the cell; even when they may be needed a few days later. In addition, we must call the attention of Mr. Anderson to the much greater heat of the summer climate of the Mississippi Valley, where the question, during the swarming time, is not "how to keep the hive warm," but how to keep down the excessive heat.)

The Simmins direct introduction method and all similar methods are good to introduce queens that are fresh from the hive. But for queens that are fatigued from a long voyage, there is very little success in any method of direct introduction. We have had proof of this in hundreds of cases.—C. P. D.)

The Seventh Annual Meeting of the Iowa Beekeepers' Association will be held at Des Moines, Ia., on Wednesday and Thursday, November 6 and 7. The Mid-west Horticultural Show occurs the same week. Every beekeeper should be present. Many prominent beekeepers, specialists in various lines of bee work, are to be present.

HAMLIN B. MILLER,
Secretary-Treasurer.

Marshalltown, Ia.

Women and the War

By Mary G. Phillips

WHEN the history of this eventful year is written, there will be many dramatic stories to be told, individual deeds of heroism as well as stirring events involving whole nations, such as the recognition of that strange people without a home, the Czecho-Slavs. But among all the thrilling incidents of the year 1918 there is none which stands out more strikingly as an example of the patriotic spirit of sacrifice than the story of how the American housewife saved the wheat situation—saving lives by her saving food.

In a letter to the President, Mr. Hoover says, concerning the amounts of food stuffs sent by us to our allies: "I am sure that all the millions of our people, agricultural as well as urban, who have contributed to these results should feel a very definite satisfaction that in a year of universal food shortages in the northern hemisphere, all of those people joined together against Germany have come through into sight of the coming harvest not only with health and strength fully maintained, but with only temporary periods of hardship. The European allies have been compelled to sacrifice more than our own people, but we have not failed to load every steamer since the delays of the storm months last winter. Our contributions to this end could not have been accomplished without effort and sacrifice, and it is a matter of further satisfaction that it has been accomplished voluntarily and individually. It is difficult to distinguish between various sections of our people—the homes, public eating places, food trades, urban or agricultural populations—in assessing credit for these results, **but no one will deny the dominant part of the American women.**"

There is a "very definite satisfaction" to be felt, isn't there, if you are

one of the American women who has refrained from using that extra spoonful of sugar in your cooking, who has struggled with bread-making with no wheat, and who has racked her brains for meat substitutes. The "temporary periods of hardships" have not really spelled hardship for most of us—inconvenience, perhaps, a little difficulty in preparing meals, small sacrifices at most compared with the sacrifices of our allies, and yet these amazing results have been accomplished.

The civilian populations of our allies were long ago reduced almost to the danger point of privation, and as the months have gone by it has become increasingly evident that any help in their extremity must come from and through America, and so we have been sending food in increasingly large amounts across the ocean to meet the shortage. The food we have exported has gone to supply our own and the allied armies, the civilian population behind the lines, the Belgian relief, and the Red Cross. Last year, our first as a belligerent, it seemed remarkable enough to be able to export such suddenly increased amounts of food as the following: The export of corn was 2.5 times greater than in pre-war years; oatmeal, 22 times greater; rice, 170 times greater; wheat flour, 5 times greater; condensed milk, 747 times greater; refined sugar, 26 times greater. But all these exports were last year, when we had surplus above our needs. This year has been a different story.

Last spring the wheat crop was largely a failure, and the entire surplus of the 1917 crop had already been sent across. At that critical moment the allied food controllers sent an urgent appeal for 75,000,000 more bushels of wheat—the allies could not continue the war without it. Where was it to come from? It had to come from the amount normally consumed by the American people,

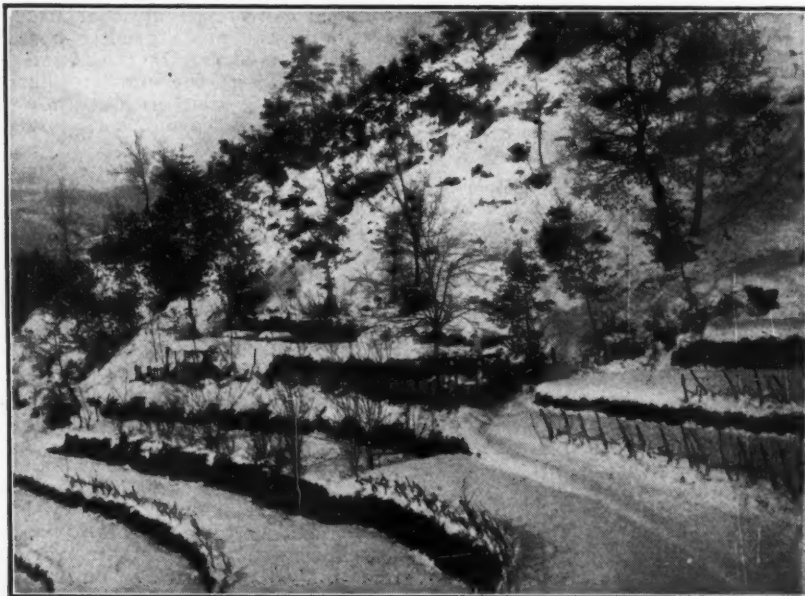
from our own home loaves. On March 29, 500 hotel men had gathered in Washington to discuss the food situation, and when they learned of this need, they voluntarily took the wheatless pledge. The dining car services followed their example, the propaganda spread, and the country was aroused. Churches, clubs, committees, began to pledge "no wheat until harvest," and as a result, instead of the extra shipment of 75,000,000 bushels asked for, we shipped 85,000,000 bushels of wheat! That is this year's wheat story, and it is regarded by the Food Administration as one of the finest manifestations of patriotic spirit since America entered the war.

What we have done with regard to wheat, we can do with regard to sugar. We are now asked to remember that sugar which is mainly a luxury with us, has become an essential element for the success of the war, therefore we must see to it that our armies have what they need and the allied peoples must not be restricted to the lowest ebb. The only way to secure a fair distribution of the sugar available is to restrict ourselves in its use more than we have, for the situation this year is serious. Not only are the sugar bins in homes, bakeries, factories and stores almost empty, but the crops of sugar beets and sugar cane in the United States have been disappointing. The yield from Porto Rico has likewise been less than was hoped for, and it becomes increasingly difficult to obtain sugar from distant sources, because of the need for ships for other purposes. Then as our army and navy grow by leaps and bounds, they require greater amounts of sugar, and we must also send larger amounts to Italy and France to take the place of all that was lost through the German and Austrian invasions. The Germans not only overran much land devoted to beet culture, but they also destroyed many factories. Finally, over 50,000,000 pounds were lost recently through submarine sinkings off the Atlantic coast.

The situation is so critical that every possible means of conservation should be observed. Again it is the housewife who must take the responsibility.

Beekeepers' wives are especially fortunate if there is always honey in the house, but it is their responsibility then, too, not to buy the two pounds of sugar allotted to each member of the family. With the sugar that you do buy, it is a good plan to portion it, putting the daily allowance for each one in an envelope with his name on. This is a boarding house method, and may be a little trouble, but it insures a fair division. There are 96 level teaspoonfuls of sugar to a pound, so that three level teaspoonfuls daily would make a monthly ration of one pound, which is the Italian allotment at present. Think how much sugar it would mean for export if every American family would voluntarily adopt the Italian ration until January.

If the children get candy hungry,



Apiary of Engineer Capponi, at Uge, Italy, in January, 1918.

here are two recipes that will satisfy that longing for something sweet:

Hunky Dory

- 3 cakes sweet chocolate.
- 2 tablespoons rich cream.
- 2 cups popped corn.
- 1 cup nut meats.

Break the chocolate into small pieces and melt it over hot water. As soon as it is melted add the cream, corn and nuts. Stir quickly with a silver fork and lift out in small lumps. This makes the sweet chocolate go twice as far.

Parisian Sweets

Put through the meat chopper one pound of dates, one pound of figs and one pound of nut meats. Add one tablespoon of orange juice, a little grated orange peel and one-fourth cup of honey or syrup. Mould into balls and roll in chopped nuts, coconut or chocolate. This mixture may be packed in an oiled tin, put under a weight until firm, then cut in blocks. Melted chocolate may be added to the mixture before moulding if desired. A little of this would take the place of dessert.

Treating American Foulbrood

By M. Wysong

I HAVE been having bad luck treating American foulbrood this spring. We have been pestered with it for several years; have had a few cases every year. We are unable to find the source; rather think that it is in some of the many beehives in the neighborhood. I have been successful in treating the disease until this spring, but failed completely this time. The method that I use is: Cage the queen for 10 days, then shake the bees in a clean hive with 5 frames of 1-inch starters for 3 days; then take the starters out and give them full sheets of foundation. The old brood-hive is on top with 2 super-covers, the top one with a Porter bee escape; leaving the old hive for about 20 days; leaving the young bees plenty of time to go below. Have never had the disease to reappear in the same hive until this spring. Last fall I even took the top hive that was partially filled with honey by a colony of American foulbrood and shook the bees in that hive-body, and they came through perfectly clean, as the hive has shown no sign of the disease. This was done after the honeyflow, when the queens were not laying, and I rather think that that is the secret of the success.

This spring I had 4 colonies with diseased combs, so treated them as before. I looked in the hive a few days later; saw that the queens were laying, so did not look at them for several weeks. Imagine my surprise in finding them in worse shape than before treatment. Of course, I was not long in going through the other hives, but found all the hives free of disease.

I treated them in a good fruit-bloom flow. Now there were no bees that got out of the old hive, as I al-

ways fasten the two covers on with staples.

Two of my neighbors had the same experience.

Did the bees from the old hive carry the disease down? (That would be my guess), or did some of the old criminals remember the source from whence they got the honey and do the same thing over? I wonder whether shaking them in a good honeyflow was what caused it.

Would like to hear from some more experienced man than myself.

We have had just a fair flow here. Weather conditions were against us for the last two weeks. Everything was very forward here, the basswood bloom was over about one week ago. Usually it does not begin until about the 10th of July here.

Kimmell, Ind.

(The most successful method with us is to shake the bees during the honeyflow as soon as possible after the disease is discovered. Of course, if you shake after they have quit breeding, there will be some chance of doing away with the disease between that time and the next spring. But there is always more or less danger of robbing when manipulations are done in a time of scarcity.

It is quite possible that your bees are getting the disease again from colonies in the woods. In that case it is a good plan to hunt the bee trees. But those would soon run out, on account of the disease.—C. P. D.)

Bee Hunting in a Hot Air Balloon

By C. E. Fowler

YOUR August number just received, and I started to read it just before dinner, and although very tired and hungry I felt I must skim some of the cream off. I read transferring bees by using sulphuric

ether, how far bees will go for honey, by L. B. Smith; then I ran right into a mountain of honey, by Lou Sites. I got so mad at Lou for leaving \$400,000,000, worth of honey just because a few bees chased him that I immediately asked a friend to lend me his flying machine, but as he could not spare it, he lent me his hot air balloon; so, after stopping at a drug store to get some sulphuric ether, and calling at Smith's to get some of his strain of bees, I started out to find that mountain of honey.

Every mountain I would come to I would let out a few bees. Like Noah's dove, most of them returned until finally all the bees in the box got crazy, and when I let them out they started like robber bees for a mountain in the distance.

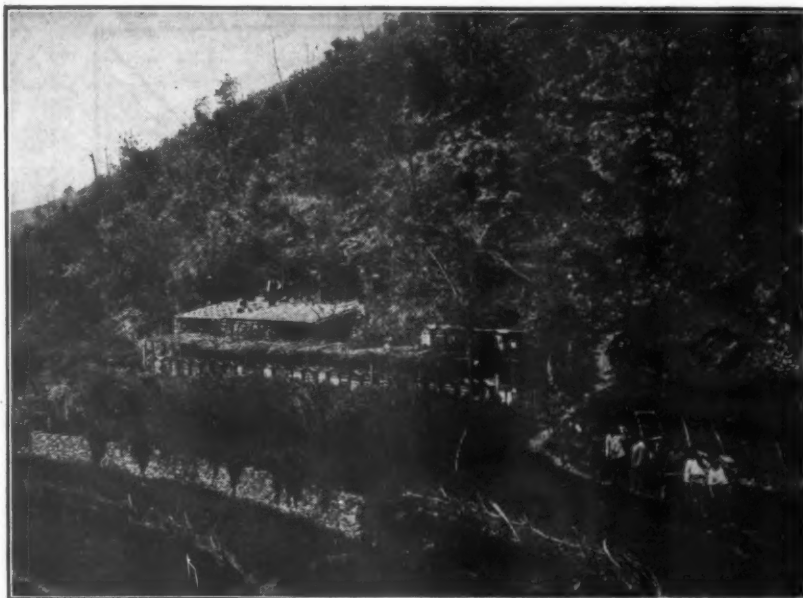
At first I thought it was a volcano in full blast, but it was the bees going in and out that fooled me.

I let loose some of the sulphuric ether and the cloud of bees dwindled until they were all lying quietly in a pile on the side of the mountain many feet high.

Upon examination I found these to be a distinct and entirely new kind of bee (*Apis imaginata*). Instead of putting their honey in small cells or long cells like the bees of Jerusalem, they put it in one large cell 100 feet in diameter and one-half mile deep.

While marveling at this great sell I met John D. Rockefeller on his summer vacation and I made arrangements to have him build a pipe line to tide water for half of the honey, but he wanted his share to be the first half, which did not suit me very well, and while we were quarreling over who should have the first half, the bees woke up. John got stung, and I heard the dinner-bell ring. (And the price of honey is still going up.)

Hammonton, N. J.



The Capponi apiary in May. The bee shed was built by Austrian prisoners, except the tiles of the roof.

A Paper Winter Case

By A. F. Bonney

I HAVE evolved a plan of wintering which will, I believe, prove as good as any other, and at a cost, for material, of not more than 25 cents to the colony. As to time, two hours should be enough to make a case, ten or fifteen minutes to prepare the bees for winter.

I shall use a material of which hundreds of thousands of pounds go to waste in this country annually. I allude to the corrugated paper used in making boxes and packing cases, between fifteen and twenty thousand tons of which are made daily in the United States. All that a man can ever use may be had for the asking, and any sized pieces can be utilized, but the larger the sheets are the better.

Begin by making a box one-half inch larger than a standard Langstroth, in width and length, and as much deeper as required. If no cushion or packing material is to be used above, the form may be 12 inches high, but if the absorbent cushion is wanted make the form 14½ inches high, which will allow 3 inches for the cushion. Nail this box, open side down, to a board which must extend four inches beyond all sides of the form. Then across one end, which will be the front of the form, nail a board three-fourths of an inch thick and four inches wide. The ends of this must come flush with the sides of the form, and make the opening in the case for the entrance. Finally, give the form a coat of boiled linseed oil, so that accidental glue will not adhere to it.

The next step is to cut up paper boxes, getting as large sheets as possible; trim them, using a steel square and a sharp knife, then proceed to cover the form. This done, cover all cracks with strips of cloth put on with glue. In my experimenting I have found it better to cover the

form with newspaper a couple of inches, which insured ready removal of the finished case, and the separate pieces of paper board must be held in place with nails until dry. Treat the other corners in the same way. Fill in between these pieces with corrugated paper, and now spots of glue will be all that is needed; then cover the sides, using nails, and let dry. You now have two layers finished.

In building subsequent layers put the bent corners first on the ends of the top, then on the sides of the top, then on the sides again, building up between pieces as at first, which will strengthen the case and make it warmer.

I do not know how thick this outer case should be, but as it rests on cleats nailed to the edge of the bottom-board, sides and back, enclosing the rim of the bottom-board, and is impervious to heat and cold, as well as air tight, one inch might be enough, while three would do no harm.

Finally, bind the bottom edges of the case with cloth, and coat the whole case with liquid asphaltum, such as is used in painting roofs. This will penetrate one or more thicknesses of the paper and make it impervious to air and water and inside heat. This paint retails at about 25 cents a gallon, and that will probably cover several cases.

The case being ready, nail ¾x¾ inch strips around the bottom-board, sides and back. I mean by this, on the edge of the bottom, not on the rail, on which the brood-chamber stands, then make a board of the corrugated paper one-half inch thick, bind the edges with cloth and coat with asphaltum. This must be 19½ inches long and scant 14¼ inches wide and is to lie on the bottom-board inside the rails. This allows a clear half inch between the inside of the front wall of the brood-chamber and the edge of the insulating board, which added to the quarter-inch between the board and the bot-

tom of the hive gives a good, large entrance, and one that opens downward, thus reducing the danger of clogging with dead bees or sleet.

The ¾-inch opening under the front edge of the case, at the entrance may be reduced by inserting a ¾x¾-inch block. My choice is for a 3x¾-inch opening, protected from mice, which would call for a block about 11 inches long. Moreover, I want the entrance of one corner of the hive, as it tends to protect the interior from direct effect of wind.

The cost of such a case should be small. The form, which could be made of cheap lumber, would last a long time, and need not cost more than sixty (60) cents for lumber and nails, while the glue and paint for the cases should not cost more than ten cents. If but ten cases were made the total cost should not be more than \$1.60, or 16 cents per case. One hundred cases would cost about 10.06 cents each. This, of course, for material alone, against \$5 to \$7 for a quadruple case.

It would not be impossible to raise the rail of the bottom-board and use a thicker insulating board under the brood-chamber, but as heat goes up, and none escapes in this case, the half-inch insulating board may be enough.

Buck Grove, Iowa.

A Letter From Italy

Friend Dadant: We have had a very late season here, the bees swarming as late as July 14. I have adopted your advice to spread the combs. I now place 11 where I formerly used 12.

The hives of my apiary, which you have once shown in the American Bee Journal, of which I again send you photos, have been painted with paint and oil of light yellow color, with double slope covers and look very elegant. But I have noticed that:

1. Unpainted hives are more healthful for the bees than painted hives.

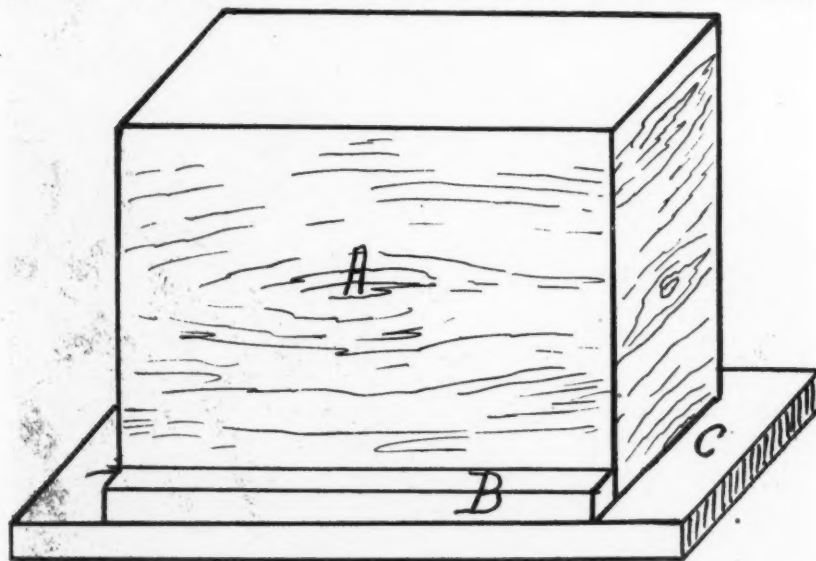
2. However greater the cost, it is better to keep hives of bees under a shed than in the open air; they suffer less from the cold or the heat and work much better.

The past winter the snow has crushed the "pergola" which covered my hives, as you may see in the snow picture; so the past spring I rebuilt it with the help of Austrian prisoners. They made everything except the tiles of the roof.

I send my best wishes to yourself and your lady, to whom I wish to be remembered.

ENGINEER CAPPONI,
San Remo, Italy.

Our good friend, Engineer Capponi, is of the same opinion as Dr. Miller in his preference for unpainted hives. This preference is probably still more important in the mountains near the "Riviera" than in our dry climate. The advisability of a bee-shed or "pergola" is also



CUT 1.

A, form; B, block ¾x4; C, platform.

greater there. But a shed is good for any apiary, were it not for the cost. Deep snow, so near the sunny Riviera, reminds one of Southern California, where you may make a big snowball and, in the space of a couple of hours, bring it down to the bathing beach, where it will melt on the warm sand of the Pacific shore.—Editor.

The Winter Cushion

By L. A. Greeley

I USE shallow extracting supers and metal covers. For a winter cushion over the frames I find that an ordinary sack is just the thing, without any cutting off or sewing shut. The super is laid down on a level floor and the sack is loosely filled with maple or other forest leaves. The leaves are now crowded down until the sack will go into the super lying on the side. By reaching inside the sack the leaves are now carefully pushed into the corners of the super, after which the top of the sack is smoothly laid back over the cushion. Next I get onto the cushion with both feet and tramp it until it fits the super so closely that it may be carried to the hive without falling out. All is then placed over the frames and a 1-inch strip of paper is pasted over the intervening crack to exclude every particle of wind or air. This pasted strip is protected from rain and moisture by a curtain of oiled paper 7 inches wide hanging from top edge of super. Lastly, the metal hive cover is put in place on top of the super. Fertilizer sacks are thoroughly washed and aired before using.

Morenci, Mich.

Taking Bees From a Tree

In your August, 1917, issue, South Dakota wants to know how to take bees from a bee tree. In answer, I will give my experience.

Make a shelf or bracket on the tree where the bees enter; bore a hole in a hive and insert a rubber hose or short piece of gas pipe. Connect with the tree, plugging all spaces around pipe so that bees must go in and out through hive and pipe. Before doing this, prepare the hive by putting in full-sheet foundation, or, if you can get it, drawn-comb is good; or, better yet, if you can get it, use a frame of young brood. In four or five weeks all the bees and brood will be in the hive, having transferred themselves. If left there too long, until the hive is filled with bees and honey, they will store the surplus in the tree. Look in at times, and when the hive has eggs and brood in it, remove it; but leave long enough for the brood in the tree to hatch. This may be done from April until in August. It is best not to use good hives, as there is danger of them being stolen or destroyed. After losing seven good hives I used common store boxes with Hoffman brood-frames. By the above method

I got 20 stands of bees. All my neighboring bee-men thought I did fine. The next spring I had sixteen nice stands of European foulbrood. So, in my case, I don't think it paid to bother, as I lost the hives and got foulbrood. It is better, I believe, to buy a stand from a good bee-man, buy a good queen, increasing slowly, and whenever possible make the bees pay for their own supplies and fixtures. In this way an amateur may gain bees and experience together, and much information not obtainable in books. CHAS. L. PIERCE, De Pue, Ill.

Breeding Good Queens

By L. Sherman

HERE is the plan I follow to rear good queens: Select your two best colonies to rear drones and your third best to furnish queen-cells. In the rest of your yard have in each hive an upper story with a queen excluder under it and an outer entrance for that upper story with a drone trap. Place all the combs containing drones in those upper stories and you will have no inferior drones to mate with your queens and no drone traps at the main entrance to bother the bees in their flight.

Alabama.

Results of Wide Spacing for Extracting

By Alphonse Veith

DURING the past season I closely observed the advantage of wide spacing for extracting. The average yield of honey from 7 combs, full depth L. frames in an 8-frame hive-body, was 46½ pounds. The yield of 8 combs in the same kind of hive-body was 40 pounds only. Consequently, there would be a difference of 150 pounds for every

hundred combs in favor of wide spacing. In using a 10-frame hive, how would it work to use 8 combs only, for extracting, with equal spacing?

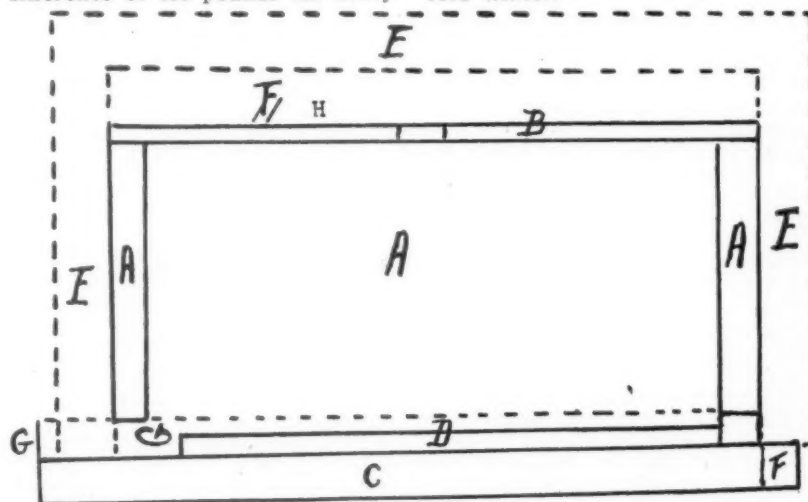
Old Time Subscriber

I started back in the 50's with Quinby's "Mysteries of Beekeeping" and have been at it ever since. I read the American Bee Journal when Newman published it in Chicago. I lived in Montana, near the Bozeman tunnel in 1883, '84 and '85. I bought a colony of bees from James Heddson, of Michigan, which cost me \$18 delivered by express. The altitude was too high, as there was about 2 feet of snow fell on June 14 and half an inch of ice on the 4th of July. We went to a picnic at Bozeman with Buffalo overcoats on. My poor bees took to the boarding-house table after sweets and drove the boarders out. The boarders were going to mob me and I had to destroy the bees. JAMES HERON, Kittitas, Wash.

Packing Bees for Winter

By Alphonse Veith

THE late Henry Alley once wrote an article on this important subject, and he put special stress on the importance of top ventilation. He said bees need for their comfort about the same as a human being—a warm bed and plenty of fresh air. If bees are packed heavily, without any top ventilation, they will surely suffer from foul air and moisture. Therefore, do not place your top-board on the packing too tight; raise it about an eighth of an inch, and there will be a slight current of air that will dispel the moisture that would otherwise remain in the top packing. Long ago I made the experience that want of fresh air will kill the bees quicker than a severe cold winter.



Cut 2
AAA, brood-chamber; B, inner cover showing bee-escape hole; C, bottom-board; D, bottom insulating board, in place on bottom-board; EEE, shadow of packing case, resting on extra rim; GG, entrance; H, space for absorbent cushion.



LEGAL SERVICE DEPARTMENT

What Can Be Done Through Organization

In order to introduce the subject which we have in mind, we will quote from two letters which have recently come to this office:

"There are places in the Dakotas where the rate—4th class—is higher than from here to New York City. There are points east where honey from California by car lots can be shipped in far below what it costs from here. That these rates are unjustly injurious to honey producers in this section any fair minded man will admit." MONTANA.

"Two years ago a town in Northwestern Ohio considered prohibiting the keeping of bees, but a fight was put up and the ordinance fell through. At the present time another town is considering the same thing. I appeared before the council a few nights back, but have not the least idea what they will do. It is usually too expensive for the individual beekeeper to fight, but I believe that thousands of beekeepers would join an organization formed to combat unjust legislation. I will gladly pay \$10 per year for this sort of protection." OHIO.

Since the above letters were not written for publication, no names are given, but they show the kind of legal problems that are constantly arising. For more than a year past the legal service department has had under consideration a plan of organization that would meet the needs of the beekeepers. After devoting considerable time to investigation it has been found that to be of real service, such an organization must be prepared to undertake legal assistance along broad lines.

Not only must it be prepared to fight unjust legislation, but the growing importance of the business makes it necessary to give much attention to freight rates. When discrimination is apparent it is necessary that the matter be taken up with the proper classification committees and evidence be collected to justify a fairer rate. Further, it must be prepared to handle claims for losses in shipment by freight and express for its members. In short, if there is any justification for an organization of this kind, it must be prepared to look after all kinds of legal matters for its members. One member will be threatened by an ordinance which attempts to make beekeeping illegal within the city limits; another will be unable to collect a small loss from an express shipment which is too small to justify litigation. In another locality the

beekeepers will be seriously hampered by a freight rate which is too high, but individuals cannot undertake to spend two or three hundred dollars in taking it up. In another State there may be urgent need of legislation for the control of foul-brood or other disease.

In this big country of ours there are many problems, any one of which represents hundreds of dollars of loss to the beekeepers as a whole, but which can only be met collectively. Whether honey be given a third or fourth class rating in the freight classification will amount to many thousands of dollars every year to the beekeepers of a single State.

The only practical solution of these matters is the employment of a firm of competent attorneys by the year. They should be located as near to the center of the country as possible. Kansas City would be a logical location, since the beekeepers of New York, California or Texas would be within about equal reach. Every member of the organization should be entitled to turn over legal matter except actual litigation, without further expense than his membership fee. Shippers of package bees who have losses from express shipments could turn in their claims to the attorneys for collection; beekeepers threatened by unjust legislation could notify the organization and the matter would be looked after. At the start the business would not require the entire time of the attorneys, but there would be enough business from the first to require competent service of a high order, and this would of necessity be expensive. If the beekeepers generally will support such an organization all this service can be secured at a probable cost of from \$3 to \$5 per year per member. With a small organization the cost per member would be much higher. With a membership of 3,000 to 5,000 it would be easily possible to save in freight rates, losses recovered and other charges, several times the membership fees every year.

It would be the idea to attend to every kind of legal service relating to beekeeping for its members entirely without cost except when it became necessary to go into court for trial. In this event the association might furnish the attorneys' services for trial of the cases, leaving the litigant to pay his own court costs.

Our older readers will remember that in 1885 a Wisconsin beekeeper was sued by a neighbor who had lost some sheep and who claimed that the presence of the bees in the white clover in his pasture was responsible. The claim seems very ridiculous now, but it was a serious matter to the beekeeper who was sued. At that time there was very little in the way

of legal decisions for the beekeeper to stand on, and it became necessary to spend a good deal of money in fighting the case. Out of this litigation there grew an organization known as the National Beekeepers' Union. The membership fee was 25 cents, and in addition each member contributed one dollar toward the defense fund. For a number of years this organization fought the legal battles of its members, and through its activities favorable decisions of legal questions were secured in a number of instances. It was later joined to the National Beekeepers' Association, and the legal protection was finally dropped when the National was reorganized. Thus the value of such an organization to its members has already been fully demonstrated.

We will be glad to use the space available for this department in a discussion of this subject by our readers. If enough beekeepers are interested it should be an easy matter to effect an organization, and The American Bee Journal will be glad to be of service. Tell us what you think of it.

Advocates Heavy Packing

I THINK there is too much red tape about the question of winter protection, as some things ought to be very plain. The time to pack ought to be no later than October 10, for this latitude, and enough packing should be used to give the required amount of protection, which would be 10 inches on sides and 12 inches on top.

JUDSON A. JONES,
Continental, Ohio.

Double Stories for Winter

For the second winter I am experimenting with a full body of honey over the usual brood-nest. The result last year satisfied me that I got splendid interest on the money represented in the extra honey left on the hives. I am coming to believe that winter losses are more largely due to scarcity of stores of good honey and to spring flying on cold days than to other causes.

H. R. SMITH,
Houghton, N. Y.

Good Crops in Quebec.—We are sorry to hear of your small crop in Illinois. Here, after selling 35 colonies at \$15, I have harvested 2,925 pounds of honey from 89 colonies, spring count, and increased to 152 colonies. These we reduced since to 142 and may reduce them down to 135 for winter. They are in excellent condition. Honey is selling at 25 cents wholesale, but we cannot secure much more at retail.

JACQUES VERRET,
Charlesbourg, Quebec.

Every beekeeper should plan to attend at least one convention this winter.



MISCELLANEOUS NEWS ITEMS



Father's tending beets and chives,
Saving us some money;
Mother's out among the hives,
Taking off the honey;
The kids are in the garden
Pulling out the weeds.
Don't we get a lot of food
From half a peck of seeds?

Disease Diagnosis.—"The Diagnosis of Bees by Laboratory Methods" is the title of Bulletin No. 671, by Mrs. A. H. McCray and G. F. White, of the United States Bureau of Entomology. This short Bulletin is intended to tell expert investigators, in a few pages, how to detect the different diseases, American foulbrood, European foulbrood, sacbrood and the nosema disease. Four cuts accompany the descriptions.

Atkins to Iowa.—Arrangements have recently been completed whereby E. W. Atkins, of the Extension Service Bureau of Entomology is to devote his entire time to work in Iowa. Atkins was experimental assistant to Professor Webster before entering the government work, and his friends in Iowa are glad to know that he is to return to that State, although in different work. With the return of Mr. Atkins, Iowa has three men devoting their entire time to the beekeeping work. Prof. F. Eric Milten, the State Apiarist, has charge of the teaching of beekeeping at the college, in addition to his official duties; Mr. Wallace Park is engaged in experimental investigation in apiculture, and now Mr. Atkins will be employed in extension work. When all the States are as fully organized, there will be rapid advancement of beekeeping as a commercial enterprise.

The Field Day of the Federated Massachusetts Beekeepers' Association, held jointly with the Eastern Massachusetts Beekeepers' Association, at the Norfolk County Agricultural School at Walpole, on August 17, drew a large and enthusiastic audience to hear the excellent program. After the address of welcome by the director of the school, Mr. Kingman, Mr. J. E. Crane of Middlebury, Vt., told delightfully of the curious marriage customs of the different flowers, and by his charming tale brought home the vast service rendered by the honeybee, apart from her value as a honey-gatherer. Following Mr. Crane were practical talks by Mr. Arthur C. Miller, of Providence, R. I., on "The Wintering Problem in New England;" Mr. Allan Latham, of Norwichtown, Conn., on "Pasturage," and Dr. Burton N. Gates, of Amherst, on "The Beekeeping Situation Today and the Future of the Industry in Massachusetts." Mr. Dallas

Lore Sharpe also contributed a few words.

The announcement of the retirement of Dr. Burton N. Gates from the office of Inspector of Apiaries and Associate Professor of Beekeeping at the Massachusetts Agricultural College caused expressions of real regret from all sides. Dr. Gates has built up an apicultural department at the college second to none in the country, and while the beekeepers of the State felt that his call to a wider territory was to be expected, his loss to Massachusetts will be widely felt.

A rising vote of thanks was tendered Dr. Gates for the inspiration and aid which he has been to the beekeepers of Massachusetts and complimentary resolutions were adopted by the society.

DOROTHY QUINCY WRIGHT,
Secretary.

Beekeeping Essentials.—This is the title of a Bulletin, published by the Massachusetts State Board of Agriculture, No. 14, of which Professor Burton N. Gates is the author. It contains 32 pages and a number of good illustrations. It compares comb and extracted honey production, gives advice as to locating an apiary, the number of colonies which may profitably be kept in one spot, outapiaries, hive materials, supers, comb foundation, equipment, buying bees, italianizing, queens, management, wintering, diseases, etc. Massachusetts beekeepers should send to the State Board of Agriculture for this Bulletin.

The Annual Meeting of the Northern Illinois and Southern Wisconsin Beekeepers' Association will be held in Memorial Hall in Rockford, Ill., on Tuesday, October 15, 1918. All interested in bees are invited to attend.

B. KENNEDY, Sec.
2507 W. State St., Rockford, Ill.

Wintering in Cold Cellar.—I placed some bees this winter in a cellar under an outbuilding where I supposed the temperature would be about right, but instead I find it is too cold. The thermometer stands at freezing most of the time, and, according to tradition and all known authorities, this means sure death to the bees before spring. Now, why is this so? Why is there not some chance for bees to pull through under these conditions as well as when left out of doors without protection through all extremes of winter temperature, ranging from freezing to

20 or 25 below zero? If the bees in a cold cellar stand a poorer show, what is the reason for it?

The cellar I refer to is dry, well ventilated, temperature quite uniform at 32 degrees, and the bees are fairly quiet. I will either have to leave them where they are or set them out in the open air. Which would you advise? WISCONSIN.

Answer.—It is an error to think that the bees will not live because the temperature gets below the freezing point, but it has been proven that they will fare better either in a cellar where the temperature is kept between 40 and 45 degrees, or out-of-doors, if they can have a flight often. If the outdoor temperature is such that they cannot have a fly at all, during the same length of time, then they are better in that cellar.

The reasoning is as follows: When at a temperature between 40 and 45 degrees, the bees eat the least amount and therefore do not load their intestines with feces. So they can remain several months, the maximum of endurance being where the temperature is the nearest to the mentioned point and not over 55 degrees.

When wintered out-of-doors, the bees eat considerably more, but if they can have a flight on each warm day they relieve their bowels of the load. If the temperature out-of-doors remains low, say below 32 degrees, for several months, then the relief is not to be had and the cold cellar is better.

From your description, I would judge the chances very fair for your bees to winter well, especially if you have such low temperature as we have had to stand during the past winter in the Mississippi Valley. But if your bees have to remain for several months in a temperature below the freezing point, while the outside bees get a flight every few days, you will have less satisfactory results.—Ed.

Bees and Red Clover.—In a recent issue I noticed a discussion of the possibility of getting honey from red clover. There are localities where bees work on red clover oftener than they do on the white. I remember that one season in the Big Horn Valley, Wyoming, we left a piece of red clover go for seed, and the bees paid more attention to the red clover than they did to either sweet clover, alfalfa or white clover. As long as it bloomed they were continually on it. There are places where it is quite a honey-plant, and other places where it is not. Alfalfa, in the corn belt, is not a honey plant, but west of the corn belt it is.

The belief that red clover does not

yield honey to bees is a superstition brought from the old country. They say that when the Lord made the bees they insisted on working on Sunday and, since they would not desist, He forbade them the use of red clover. That superstition is all there is to it.

J. D. KAUFMAN,
Kalispell, Mont.

(We insert this letter because of the legend, of which we had never heard, and also because it is another evidence that red clover does yield honey in some places. But our own experience in the matter leads us to believe that red clover often contains honey that the bees cannot reach because of the depth of the corolla. Otherwise, why should only bumblebees be seen upon it when we can smell the honey in it and can actually taste it by picking a blossom and sucking at the base of the calyx? Friend Kaufman's experience has evidently been upon clover the corolla of which was more or less stunted by the dryness of the climate. But he is right when he says that some plants yield honey in some localities and not in others. The Swiss beekeepers are practically unanimous in saying that there is no honey in white clover in Switzerland.—Ed.)

Another Experience.—I have read Mr. Pellett's letter on "Red Clover as a Honey Plant." I wish to add my experience on the same.

In my first beekeeping I gave very little attention to the different sources of honey. I was too closely confined to my business, and kept a few colonies as a side line. It was in 1901 that I first took notice of red clover as a honey-plant. In that year, up to August, the honey crop was a failure. I had given no attention to the bees except to give them plenty of room for extracted honey. My folks would leave the honey-house door ajar occasionally, and still the bees did not give any trouble. It was in the latter part of August that I went out to see why the bees were so modest about invading the honey-house, thinking that there was no honey. Imagine my surprise on finding every space filled and the bees busy, all going east in the direction of a fine field of second crop red clover, much dwarfed by the dry weather. On my way through town I met another beekeeper, Mr. Pritchett, who kept an apiary of about forty colonies. I asked him to come and extract the honey for me, as I was getting ready to make an extended trip south. His reply was, "I don't know anything about extracting, and you haven't any honey to extract; my bees haven't any, and I know yours haven't."

I went on and investigated the clover field and found the bees in full force and, as busy as I ever saw them, gathering honey from red clover. On my way home I met Mr. Pritchett carrying two full crates of as fine section honey as I ever saw. I said to him, "Where did you get that?" His reply was, "After meet-

ing you I went home and found I have plenty of it."

His apiary was within three rods of his kitchen door, but so quietly had the bees worked that he took no notice of their progress.

Again, in 1916, we had a fine crop of white clover, but the dry weather in July and August cut it off. Yet my bees continued to bring in honey. I again investigated the red clover, which was very much dwarfed, and the bees as busy as could be.

In both these cases the same conditions existed—the extreme dry weather had dwarfed the red clover and there was a complete absence of other honey-plants. The quality of the honey in both cases was the best. Perhaps a shade darker than white clover. It was very heavy. Of the 1916 crop we used the last in sections a few weeks ago. It kept in perfect condition.

B. A. MANLEY, Milo, Iowa.

Losses in Southern Beekeeping.—

What is it? I had last year three yards of bees; in one yard I noticed, about the first of June, a patch of brood that had every aspect of European foulbrood. As I had never seen any disease at all I sent a sample of the brood to the Government and asked them what was the matter with it. They wrote back saying that there was no trace of disease at all and that the brood probably became chilled or overheated. I know that they had died of neither of these causes. The disease(?) affected several combs in this one hive and one comb in another hive. This was all that I could find in the three apiaries of 200 hives.

The larvæ died for a period of about fifteen days and the disease then disappeared.

This year, about June first, I found a hive affected with the same thing at another yard several miles from the one that had it last year. I also found, out of 75 hives, at least a third of them affected, and in a few days all were affected. I then looked over the other two yards and found that all of them were affected, also.

I at once sent a large sample to Washington. In about fifteen days I got a report saying "No disease at all," but to send another sample. Well I could not find any more. The disease had cleared up. And now all colonies are as healthy as I could wish.

But for a period of about a week I do not believe that a single egg that was laid in the 200 hives ever got to be a full-grown bee. They would begin to die, from a 3-day larva up to just about time to seal the cell over the cocoon.

There was no odor at all; the larvæ would turn a blue color and in a few days die and begin to shrink and gradually dry up to a scale, if the bees didn't carry them out before they got dried up; while a few would get ropy, just a little. Most of them were carried out of the hive after they had shrunk some.

I have looked into every book on

bees that I have (and I have quite a few) and I can find nothing like it except a description of European foulbrood, and this has no odor. Most of these hives were Italians and some blacks. The blacks got it first and had it a little longer than the Italians, but I could not say that they showed less resistance to it than the Italians; in fact, I don't think that either of them showed any resistance to the attack; no eggs laid for a period of seven or eight days, matured into adult bees.

In Wilder's "Southern Bee Culture," edition of 1908 page 47, he says:

"While there is a loss, more or less of young bees in all stages of development, in many apiaries of the south, yet it is not always owing to disease, but to the source of feed, for there are certain plants that yield nectar or pollen that seems to poison the young bees, and they die rapidly for a short time, but soon it is all over and no more symptoms appear till that time next year. This loss of bees is small, and not of enough consequence for treatment."

But with me, with 200 hives in which for a period of seven days not an egg matured to a live bee, the loss is more than "small."

Next year, if the disease appears again, I will send brood to the Government and to anyone else who wishes to see a sample, and also to the editors of the different papers; but in the meantime, can anyone shed any light on the subject?

JOSEPH C. SCOTT,
Mt. Pleasant, Ala.

Supers for Sections.—I would like to give my experience with different styles of supers in hopes that it may be of some help to others who, like myself, may have found fault with some of the more common styles. I began keeping bees in 1908, with the regular beeway super and style 2 scalloped sections $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{8}$ inches.

In 1909 I bought some plain section supers of both 4x5 and $4\frac{1}{4} \times 4\frac{1}{4}$ styles and liked either much better than the beeway, as the separators were more durable and furnished a more comfortable place for bees to work.

But I was reading about this time a series of articles from Mr. Townsend to beginners, in which he advocated the placing of sections and frames in some supers at same time. I liked this plan from the start, and still use it to advantage. But for some time I did not find a super that would admit both sections and the regular Hoffman shallow frame.

In 1912 I bought some supers that used $3\frac{5}{8} \times 1\frac{1}{2}$ sections, five in a tier, thus an 8-frame super holds 30 sections and a 10-frame 35. I liked these so well that I have bought nothing else since, though I am still using the other three styles mentioned above but think I shall change them to conform to the last mentioned this season.

I claim the following advantages for them:

1. They are more economical and

convenient, i.e., they cost no more than other supers and hold more honey, and having no inside fixtures to nail, much time is saved in nailing. With no ends to section holders they are more convenient to fill, as sections always drop in place easily and fit so snugly to slats there is no room for bees to fill with propolis, consequently they are easier taken out and cleaned.

2. It is the only super I know of that is interchangeable with sections and regular Hoffman frames, except where sections hang inside of frames, which is undesirable.

3. If I need to feed in a super I can stack the slats and fences to one side, leaving room for feeder without having inside fixtures misplaced.

I speak strictly from a producer's standpoint, as I have no occasion to ship honey, and my neighbors do not care what style of section they get. For my use I would not consider any other section, as I think these are perfect. Am surprised that more is not said of them in bee journals and catalogs. G. E. LEMON, Nash, Okla.

Uniting Nuclei.—I will describe a device that I find very useful in uniting nuclei or weak colonies. It has worked more perfectly with me than anything I have yet tried. I make a division-board of strips that fit tight on the bottom-board and sides and even with the top of cover. I cover both sides of this skeleton frame with wire cloth, so the bees can't fight through.

I move, let us say, three frames to one side and put in the division-board and a piece of oil cloth over the frames and then block up the entrance at night and move this colony to the stand of the one I want to unite it with. I slip the frames from the other colony in the other side of the hive, having the wire cloth division-board in, and leave that side of the entrance open.

In three or four days I release the other bees; or I can leave them longer, as they get ventilation through the wire cloth. They unite without a bit of quarreling.

I always kill the poorest queen when I first unite them.

Perhaps this is an old device, but I have never heard of it.

FRANK HAACK,
Marion, Ore.

Wraps for Outdoor Wintering.

When it is desired to wrap hives for outdoor wintering it is entirely unnecessary to buy building, roofing or other expensive paper. Use newspaper for all except the outside layer, which should be a fair quality of wrapping paper, such as merchants get in rolls for wrapping goods. This can be bought of almost any desired width. After all is in place, tie down firmly and then, with a paint brush, give a coat of the following mixture: Kerosene oil, 1 pint; raw linseed oil, ½ pint. This will so waterproof the paper that it will stand constant exposure to rain and sun for a year or two.

L. A. GREELEY,
Morenci, Mich.

Another Feeder.—A good deal has been said in regard to feeding and feeders, but as I have never read anything in the American Bee Journal that comes up to my feeder, I am giving a description of it, as I think some of the subscribers may be benefited by it. I take a lid from a 2-lb friction-top honey can and cut a hole through it about an inch and a half across. Over the top side of it I solder a piece of galvanized screen wire, then I put it over the hole in an escape-board upside down, over this I turn a 5-pound honey pail with the lid closely perforated, and the bees can come up and reach through the screen wire to the perforations in the pail that contains the syrup. If it is desired to use more than one pail as many holes can be made in the escape-board as is desired. This keeps the bees out of the extracting super and yet you have an inside feeder less the trouble of the bees while replenishing the syrup.

C. H. WILEY,
Harrisburg, Ill.

Device for Transferring Larvæ.—I have used many styles of spoons and scoops for the above operation, but not being satisfied with any of them, I designed the following tool, which works quicker, easier, and with no danger of injuring the young larvæ:

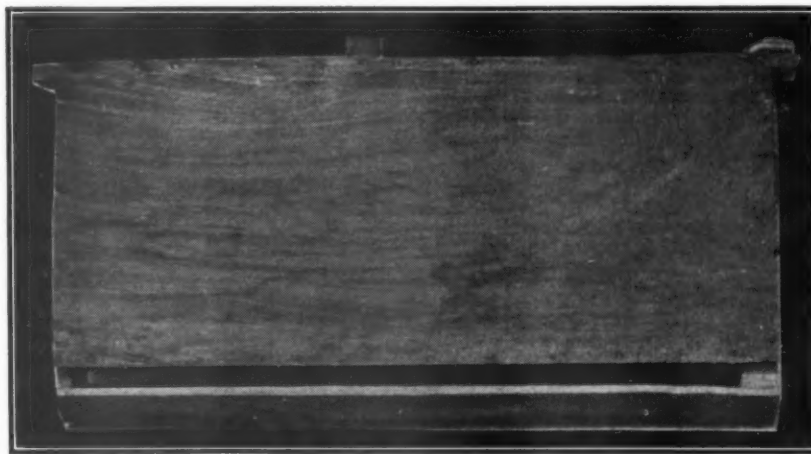
Take a piece of wood about three-sixteenths of an inch thick and 4 inches long and shave one end down to a long tapering point; next take a piece of horsehair about 6 inches long and double it and twist the two strands together to give strength

and firmness. Now double again and lay the two doubled ends on the pointed end of the stick, leaving the horsehair project beyond the point of the stick to form a loop or ring about five-thirty-seconds of an inch in diameter; wind fine thread around horsehair and point of stick and it is ready for use. Hold brood-comb so that the light will shine down to the bottom of the cell, insert the ring or loop of horsehair to the bottom of the cell and with a gentle and slightly twisting movement you can easily get the young larva lying snugly through the ring when it (and most of the jelly) may be lifted out and placed in the artificial cell cup.

JOHN GRUBB,
Woodmont, Penn.

Beekeepers' Conference.—We have recently received a report of the fifth annual conference of the National Beekeepers' Association of New Zealand. It reads much like the reports of the conventions in our own country, with the usual problems of disease control, marketing, etc. The organization seems to be in a prosperous condition, with more than a thousand dollars in the treasury.

Those Honey Stickers.—The "Eat Honey" stickers which originated with Dr. Bonney and which have been sold here in America by millions are now finding their way into foreign land. They are being advertised to the beekeepers through the foreign journals and bid fair shortly to come into world-wide use.



The Saunders Feeder.

A New Feeder

By Charles Boone Saunders

MY invention is a bee-feeder which is made on the style of a brood-frame, or made to fit into brood-chamber the same as a brood-frame. This feeder has a reservoir and a trough, and with holes so placed with reference to each other as to conduct the syrup or honey from the tank to the trough. There is space left between the reservoir and trough large enough to let the bees to the syrup or honey. There is a rod in one end of the reservoir which is used to regulate the

flow of syrup or honey from reservoir to trough. I fill the feeder through the hole in the top of the reservoir. After reservoir is filled I place a cork or wooden plug in the hole and after I have put the feeder in the hive I turn the rod that is at one end of the reservoir, as shown in the photograph.

This feeder can be made of any suitable material. The feeder can be used in the hive any time of the year. Bees, also, will not drown. It is a good feeder to use in winter or early spring. When used in spring for feeding you need not use a super.

Barrington, Ill.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, IL.
He does NOT answer bee-keeping questions by mail.

Swarming

June 15 a colony was divided, leaving queen with very little brood on the old stand. Yesterday, just before dinner-time, this colony, to all appearances, swarmed, settling near by. Very soon all the bees returned to the hive, and, it being extremely hot, I let them alone for the time being. This morning I went to examine this colony, and on 3 frames found 7 or 8 queen-cells, most of them capped; there were also eggs (some) in the hive. The bees appeared so profuse in quantity that, beyond doubt, they desisted from swarming, for the time being at least. What should I do with this colony? PENNSYLVANIA.

ANSWER.—As I understand it, the question is this: A colony swarmed yesterday and returned. This morning's examination shows sealed cells present, also some eggs. The question is what to do this morning. It seems to be a case of swarming, with nothing unusual in the case except the return of the swarm, that return being likely caused by the inability of the queen to go with the swarm. Your guess is that the bees have given up swarming, at least for the present. My guess is that they are just as much in the swarming notion as ever, and that they will swarm again in the course of the day, or later. Possibly the queen may be able to go with them; possibly not. If not, then I should expect the swarm to issue with the first virgin that emerges.

The question, however, is: What shall be done this morning? There is a possibility, of course, that nothing need be done, but I wouldn't trust that possibility. If I wanted increase, I should take away all brood, with adhering bees, putting it in a new hive to build up. If I didn't want increase, one of the ways that might be adopted would be to destroy all sealed cells, put the brood above an excluder, leaving the queen below, and destroying cells above the excluder again about 8 days later.

Beeswax From Honey and Pollen

In the August American Bee Journal, page 280, question 2, "What Do the Bees Get to Make Comb of?" your answer is: "Honey and pollen." Now, Doctor, I am not in a position to dispute your word, and would not do so anyway, but I have answered this question a great many times, saying "The bees make the wax from honey."

Just simply asserting anything does not prove it to be a fact.

Some years ago I found a colony of bees that had been robbed in November. I took the bees and put them in a box, without any comb. They were fed on sugar syrup. In February I looked into the box and saw as white comb as was ever built. The bees had not gathered any pollen during this time.

Whether we are both right, or both wrong, will not make much difference in the honey crop of the world; but I desire to know the truth. It is your turn to offer proof, now.

OKLAHOMA.

ANSWER.—I do not see that there is necessarily any difference between my answer and your experience. For even though it should be a fact that bees can build comb without pollen, that does not mitigate against the possibility that they can do better with pollen than without it, and that they always do use pollen when they can get it.

I can offer nothing from my own experience, but find the matter treated quite fully in Dant's Langstroth, at page 104, 1907 edition. It will be there seen that before Huber's time

most apiarists believed that wax was made from pollen, either in a crude or digested state. Huber demonstrated, as you have done, that bees can construct comb when fed honey or sugar, without pollen, and that they cannot make it if fed pollen without honey or sugar; but he fell a little short of getting the whole truth, for "he did not prove that when permanently deprived of it they can continue to work in wax, or if they can, that the pollen does not aid in its elaboration."

"Some pollen is always found in the stomach of wax-producing workers, and they never build comb so rapidly as when they have free access to this article. It must, therefore, in some way, assist the bee in producing it."

"The experiments made by Berlepsch show that bees, which are deprived of pollen when they construct combs, consume from 16 to 19 pounds of honey to produce a pound of comb, while, if provided with it, the amount of honey is reduced to 10 or 12 pounds. If the experiment is continued without pollen for some time, the bees become exhausted and begin to perish. It is therefore demonstrated that although nitrogen, which is one of the elements of pollen, does not enter into the composition of beeswax, yet it is indispensable as food to sustain the strength of bees during their work in comb-making."

No Swarms, Full Hive—Feeding Granulated Honey

1. I have 10 stands of bees, all in most thrifty condition. None of them have given me a swarm this season. I put on the queen-excluders and supers when the orchards were in bloom. Was that too soon, and cause of none swarming?

2. I have one bumper 3-story hive, supers being full size 10-frame. All well filled with honey. When it is time to take off the surplus I shall be in trouble, for the colony is so large it will be impossible for the mother hive to hold all the bees. What had I better do to save the bees and also the honey?

3. Can I feed last year's granulated honey successfully to my bees by setting it out in the orchard where the bees will easily find it? I have about 100 pounds of it, all in extracting frames. Will the bees work it up and store it?

ILLINOIS.

ANSWERS.—1. Undoubtedly the abundance of room given, especially so early, had a tendency to keep down swarming. Most beekeepers, however, would consider it a desirable thing. At the same time it should be said that it is not generally desirable to give unnecessary room in fruit-bloom, because it costs something to warm up space not needed when all the heat should be conserved for building up. But when there is danger of crowding in the brood-chamber, then more room should be given.

2. Don't you worry about those bees having room enough. If there isn't room in the hive they can hang on the outside, and when it becomes cool enough you'll find them inside. A few days ago most of my colonies were three to five stories high, and every story seemed full of bees. I reduced them to two stories each, and the bees didn't appear any more crowded, and later on I don't expect them to have any trouble crowding into one story.

3. Yes, you can lay the combs flat on the ground under the trees, where the sun will

not melt the combs, and as fast as the bees lick the combs dry sprinkle water upon them with a sprinkler. You may also set them out in hive-bodies, but it will be more trouble to keep them sprinkled. In either case you stand a chance of dividing with neighboring bees. It should also be added that if the honey from such combs is stored in supers, there is more tendency to granulation than there is on honey gathered directly from the flowers.

Mixed Italians—Requeening

1. I have 10 colonies of 3-banded Italians that are mixed with the black bees; am thinking of requeening with Golden Italians. Are the Golden hardy? I mean, can they stand our cold climate as well as the 3-banded? Are they as good honey-gatherers, and as gentle as the 3-banded?

2. What time in the year is best to requeen? How is the best way to requeen?

MARYLAND.

ANSWER.—1. Golden vary greatly. Some are as good as 3-banded in storing and hardiness, while others are inferior.

2. Other things being equal, you cannot do better than to requeen in fall, but not too late. Instruction for introducing a new queen hardly belongs in this department (it would take more than a whole number to give half that has been written about it); but you will find instructions in your bee-book, and instructions for introducing are sent by mail with the queens.

Swarms—Comb Honey—Indian Corn

1. Suppose I get me a "swarming box" and have it ready for next spring; should it be put where bees are expected to swarm? or should I hold it among bees while swarming and before they settle? Are they worth while?

2. Do bees prefer any certain kind of tree to settle on?

3. Should combs be wired in shallow frames if you run for comb honey?

4. When I have full story and full size frames and run for comb honey is it necessary to wire the same?

5. Are Indian corn tassels honey producing? TEXAS.

ANSWERS.—1. Much has been thought and said about swarming-boxes or swarm-catchers of different kinds, but if you have your queens' wings clipped you will find little use for anything of the kind. If you use the Manum swarm-catcher you will wait till the swarm settles, and then you will try to get the swarm into the swarm-basket, generally by shaking the limb on which the swarm has settled so as to make the bees fall into the basket, when you will dump the bees in front of the hive into which they are to enter.

2. I don't know that they prefer one kind of tree to another, but they have a decided preference for a place on which a previous swarm has settled, so that if a swarm settles on a certain branch of a tree today, several swarms may settle on the same branch on succeeding days in succession.

3. No wire should ever be in comb honey.

4. You cannot very well produce comb honey in deep frames, unless it be in deep frames containing sections. For wire is out of the question in comb honey, and without the wire, foundation thin enough to be used in comb honey would be likely to be torn down by the weight of the bees. You might use thin foundation in a deep frame by having a horizontal bar through the middle of the frame, making the frame equivalent to two shallow frames.

5. I think Indian corn is not considered a honey-plant, although bees get pollen from the tassels, and I have heard of their getting something like nectar from the joints of the leaves.

Queenless Bees

1. How many ounces of honey are supposed to be in a pound in Pennsylvania?

2. Is there any State bee man in this State; if so, what is his address?
 3. Will bees carry in pollen if they have no queen with them in the hive?
 4. Is cutting out queen-cells a good plan to keep bees from swarming?
 5. If I put a late swarm in a hive, in a few days another small swarm issues and I put that one in the same hive, will the queen that is in the hive kill the one that is run in with the last swarm, and will the hive of bees do well?
 6. One of my colonies swarmed this season. I put the swarm in the hive and in half an hour they all went back to the old hive. The next day they came out again. I tried to hive them, and they went back again. In two weeks they came out again. I tried to hive them, but they would not go in the hive, but went back and lit on the roof of the old hive. What was the cause of these bees doing this?
 PENNSYLVANIA.

ANSWERS.—1. Honey is sold in all the States by avoirdupois weight, 16 ounces to the pound.
 2. Address Prof. I. G. Sanders, Harrisburg, Pa.

3. Yes and no. I think it's this way: When a colony becomes queenless, the bees continue to gather pollen; but when there is no longer any brood to feed and a surplus of pollen is on hand, little or no pollen is gathered.

4. In some cases cutting out queen-cells will prevent swarming, but generally it will only delay it for a time, if it delays it at all.

5. If both queens are laying queens, or both virgins, the bees are likely to do well; but if one is a laying queen and the other a virgin, there may be fighting. In any case, one of the queens will be killed, perhaps by the bees rather than by the other queen.

6. I don't know. It might be, however, that there was some trouble with the old queen, so that she could not go with the swarm, which would account for the return of the swarm the first times, and then two weeks later there was a young queen (the old one having been killed), and then it might be that the bees merely swarmed out with the queen on her wedding trip and then returned.

Gasoline for Foulbrood

Is it true that gasoline will kill foulbrood germs? If so, how would it do to paint hives, cover and bottom with it? Do you think the bees would again work in built-out frames dipped in gasoline after having been cleaned out?
 CALIFORNIA.

ANSWER.—I don't think gasoline would be at all effective. I think bees would use combs that had been dipped in gasoline; but I don't know how long it would take for the combs to dry out enough to be used.

Speed of Extractors

1. What number of revolutions per minute should an extractor make?
 2. How long should a comb be revolved to obtain best results?
 3. Is there any arrangement by which the slip gear improvement can be applied to the old Cowan reversible basket extractor?
 4. Is an alcohol barrel, such as can be obtained at the druggist's, suitable to store honey in?
 MASSACHUSETTS.

ANSWERS.—1. To give a definite answer to your question definite conditions should be given. If one extractor has 6 inches from the central shaft to the comb and another has a less distance, the latter will require a greater number of revolutions in a minute. If it has a greater distance, it will require fewer revolutions. If the combs are old and tough, it will be well to run them faster than would be safe with new and tender combs. The proper speed for honey that is very thick and rather cold may be four times as great as for honey that is thin and warm. With extractors of different sizes, combs of different strength, honey of different thickness, and of different temperature, you will see that there might be a thousand different answers. So there is wisdom in not attempting to give a definite number of revolutions per minute. After you have

had some experience, and have broken a few combs in running too fast, there is little doubt you will be able to tell about what is the right thing in your case.

2. Again I don't know. It varies with varying circumstances, and you'll have to learn by experience, just as others have done.

3. I doubt it. But I don't believe the slip-gear makes such an immense difference.

4. Yes.

Fall Treatment of Foulbrood

I have what I believe to be American or European foulbrood in one of my colonies. I want to use the McEvoy method of brushing the bees on frame foundation and keeping them confined for four days. I note you say wait until the honeyflow is on. That would be next June. Could I at once, after confining bees four days, put them into a hive containing about 30 pounds of honey? Or should I wait until spring?
 NEBRASKA.

ANSWER.—If it is European foulbrood, I wouldn't use the McEvoy treatment, but cage the queen for 10 days. That's in case the disease is not bad and the queen is a good one. If the disease is bad, destroy the queen and manage so that a week or 10 days later there shall be laying in the hive an Italian queen of best stock. If it is American foulbrood, don't wait till next June, but follow McEvoy's advice, and as soon as there is no longer any unsealed brood in the hive exchange the combs for combs of sealed honey. That's all the treatment required. Before doing anything, better right away send a sample of the diseased comb to Dr. E. F. Phillips, U. S. Department of Agriculture, Washington, D. C., and he will tell you which foulbrood it is and send literature as to treatment. If you write in advance he will send you a box in which to mail the comb. It will cost you nothing.

Removing Foundation

I have a strong stand of bees and they had three supers on that were pretty well filled. I raised the three up and put on a super filled with the one-pound sections that had foundation in them. When I looked in them the other day I found that they had taken all the foundation out of the two outside rows of sections. Now, what caused them to do that? I have another hive that has got a super on that I put on the same way, only I put it on top, and this hive has got the 27 pound sections nearly full of honey.
 ILLINOIS.

ANSWER.—I don't know. I should guess that it was pretty hot and a heavy mass of bees might have broken down the fastening of the foundation; but in that case it would be more likely to be the inside instead of the outside sections.

Prime Swarm Swarms

In 1916 we bought a queen and 3 pounds of bees. Same proved to be of excellent stock. This same colony, on June 4, this year, cast a prime swarm of immense size. We hived it in a 10-frame hive, and on July 20 this same prime swarm cast a swarm, also of large size. Now, I understand a young swarm hardly ever swarms again that season. The hive that cast the swarm had 4 supers on, 2 of them had 56 well filled sections, and some work done in the other. Why did this swarm act as it did?
 MINNESOTA.

ANSWER.—I don't know that I can give any reason why a swarm occasionally sends out a swarm. Possibly because very strong and of swarmy stock, or because in some way the queen feels crowded.

Poison From Propolis

I have been keeping bees for a few years and have been right successful. But something about the wax poisons my skin and makes me break out, so I am afraid I will have to quit. I went to a local druggist physician and he recommended washing in a saturated solution of borax water. This gives me relief in a measure for the time. Can you recommend something which would enable me to get rid of the trouble without quitting the bees?
 COLORADO.

ANSWER.—I am sorry to say I cannot help you out. I think it likely it is the propolis that makes the trouble, some skins being peculiarly sensitive to it. The trouble comes especially at the time of scraping sections, when more or less dust must be flying from the dry propolis. In such a case it is better to give up comb honey and extract. If, however, the trouble comes with you when producing extracted honey, I'm a little afraid the best thing is to give up bees. Something was written on this subject in the June number, page 302.

Queen-Excluder—Drone Combs

1. Do the Dadants usually use an excluder for queen in their large hives to produce extracted honey? Do you advise an amateur to secure queen excluders if he uses the Dadant hives?

2. I often notice this advice: "Cut out all drone-comb found on brood-comb frame and replace with foundation or worker comb." How can this worker comb be fastened? Won't it make a very uneven brood-frame, and won't the honey-cells be cut and honey run out and injure said brood-frame?

3. In wintering in 10-frame regular hive, is it necessary to leave on one or more supers, or do you remove all supers? All bees are wintered outdoors in our climate.

ALABAMA.

ANSWERS.—1. The Dadants use no queen-excluder under their extracting-supers, but these last contain shallow frames. If you use them the same as the Dadants, it does not seem necessary to use excluders.

2. The patch of worker-comb to fill in the hole made by cutting out the drone-comb is made a trifle large, and is squeezed into place and held there by the tight fit. After the bees are done with fastening it in, you will hardly notice any unevenness, and the comb will be as good as if there had been no patching. The dripping of honey would be easily cared for by the bees, but this patching is usually done at a time when little honey would be in the way.

3. Usually all supers are removed at the close of the honey season, although some leave on a super for winter, generally packing it full of some light material, such as chaff, leaves, or planer shavings.

Increase—Foulbrood—Apiary on Shares

1. Would it increase the population of the hive to leave full supers on hive till late in the fall? I should think that feeling rich, they would be more lavish in brood-rearing.

2. How could I unite the bees of an American foulbrood colony to a clean colony without danger, in the fall?

3. What kind of an agreement could I propose to a farmer regarding an outapiary? I drew one up on a typewriter with the aid of a young lawyer which so scared the farmer that he turned me down flatly.
 ILLINOIS.

ANSWERS.—1. I don't believe it would make any difference.

2. If you wait till there is no more unsealed brood, I don't believe there would be any danger.

3. In most cases there is no agreement in writing, and in most cases there is no trouble. Indeed in most cases there is no agreement as to anything the farmer is to do, only he gives permission for the bees to be put on his land, and then, if the beekeeper is wise, he will give the farmer enough honey so that the farmer will want the bees to continue. In some cases, however, the farmer is to do something in the way of taking care of the bees, as hiving swarms, in which case a definite agreement in writing would be advisable.

Bees on Shares

G. has 6 swarms in old box hives and has no time to give them.

F. would like to transfer them, introduce Italian queens and run them for extracted honey.

Would you suggest a plan of division of profits that would be fair to both parties, F. doing all the work, but bees staying on G.'s place?

NEW JERSEY.

ANSWER.—It is hardly possible that there can be any fixed rule that would apply in all cases, and each case must stand for itself. Suppose G. is perfectly competent to take care of the bees himself, but is so crowded for time that he would rather have some one else do the work, while F. is only a beginner, and would like to do the work for the practice. In that case F. might be well satisfied to get one-fourth of the honey, leaving G. three-fourths. But if G. knows nothing about the care of bees, while F. is thoroughly competent and has all he really cares to do in taking care of his own bees, the latter might not care to do the work for less than three-fourths, or even more, of the honey. Possibly conditions might be such in most cases that an even divide would be not far out of the way.

Winter Protection

I have wintered my bees the past three seasons in quadruple winter cases with very satisfactory results, but as I increase in number of colonies I would like to get a simpler method and am planning to arrange as follows: I group my colonies in twos, use three brood-chambers for each, putting the bees in the first and second stories, packing the exposed sides and top story with leaves or chaff, and packing the rear with leaves, held in place with poultry netting. I have never seen this plan suggested, but it certainly is economical, and I believe that with the stores arranged as above the accessibility of stores and the conservation of the heat of the colony will be better secured than with bees confined to a single story. What do you think?

NEW YORK.

ANSWER.—I have had no experience in the case, and one can seldom be sure how a plan will turn out until it is tried, but I see no reason why you should not make a success with the proposed plan.

Swarm Would Not Stay in Hive

A telephone lineman asked me to get a swarm out of a cable box on the top of a telephone pole. I had an extra hive, but did not have any frames for it, so got the bees into the empty hive and as the comb was fastened in among the telephone wires, cut it out the best I could and put it in the hive and took it home. I left it just as it was for five days and the bees seemed to be working and nicely settled, having some brood and some honey. The hive was an 8-frame, so I got six frames all ready with full sheets of foundation, took out brood and comb, fastened it all in the other two frames and put all eight frames in, the two with brood in the center.

While fastening in the brood-comb some of them were just emerging and crawled about, unable to fly. The bees were not very cross, and it took only a short time. I did this toward evening.

The next afternoon, about 4 o'clock, these bees swarmed. I put them back in the hive. Next day at noon they swarmed out again. I looked the hive over, but saw nothing wrong. Young bees were emerging and the bees had done nothing to repair the comb. I put them back in the same hive and they went right in. The next morning, about 7:30, all bees were gone except the young bees just hatched, who were crawling around the entrance.

What do you think caused the bees to act in this manner? I did not suppose they would go away and desert their young. The hive is one from which I transferred a colony into a new one this spring and which I cleaned up and repaired in good shape.

IOWA.

ANSWER.—Without any fuller information, it's a matter of guessing, and the safest guess is that the hive was in too warm a place, and enough ventilation was not given. That's the cause of such desertion in the great majority of cases. When bees are put into a new hive, the hive should be well shaded. Even if shaded, there may not be ventilation enough, and, for a few days at least, it is well to raise the hive on blocks an inch or more, and to shove forward the cover so as to allow a space of half

an inch on top at the back. It should be said, however, that it is quite unusual for bees to leave a hive with brood in it, and it may never happen to you again.

Foulbrood

1. I am sending you some kind of a bee. Can you tell me what it is? I caught it working on the red clover. There were a good many of the same kind of bees gathering both pollen and nectar from the red clover. I never saw a bee like it before.

2. My bees are diseased, I think, with European foulbrood. I have caged the queens for ten days, then released them. The foulbrood was still in the hive at the end of the ten days. Will the bees clean out the foulbrood, since I have released the queens?

3. How soon will I need to look at them again?

4. If there is any foulbrood when I look at them, what shall I do?

5. Had I better kill those queens, or cage them again?

6. If I kill the queen, will it do to let the bees raise their own queen from their own brood, or from brood from other colonies?

7. If foulbrood shows up after the honey-flow, what shall I do?

IOWA.

ANSWERS.—1. It has the appearance of a megachile, or leaf-cutter bee.

2. If it is the European variety of foulbrood, in all likelihood you will find it disappear. At the end of ten days there may be black-looking dead brood in the hive, but the bees will not eat it to continue the disease. But why don't you send a sample to Dr. E. F. Phillips, U. S. Department of Agriculture, and learn for certain what the disease is? It will cost you nothing, and you will not be working in the dark.

3. It is not very important just when you look, but it might be ten days, two weeks, or more, after the queen renews laying. If you then find no large unsealed brood with a distinctly yellow tinge, you may know there is no European foulbrood, although, being in the neighborhood, it may reappear at any time.

4. Treat it again.

5. If the case is mild and the queen a good one, cage her; otherwise kill her, for in a very bad case it seems to affect the queen so she is not worth saving. At any rate, you should get into each hive, as soon as you can conveniently, a good Italian queen.

6. Yes, only to let them raise a queen themselves will make an unnecessary break in brood-rearing, which need not be longer than ten days, and possibly less.

7. I'm not sure whether you had better do anything till honey yields next year, only you should, right away, send to Dr. Phillips and get free literature informing you pretty fully on the whole subject.

Introducing Queens—Pickled Brood

1. Which is the best way of introducing in the fall, when there is no more brood in the hives, nor any honey coming in? Earlier I would have used your plan, to set the colony made queenless, on a new stand, leaving a frame of brood on the old stand to catch the old bees. Do not you think such a dividing at said season would disturb the colony too much for successful requeening? (They are valuable queens from Italy.)

2. What do you think of the distress method of Mr. A. C. Miller and of Baldwin's smear-plan, in the June number of American Bee Journal?

3. Which treatment would you recommend in the following disease, which I believe to be pickled brood (please state whether I am correct)? Brood dies in the combs after they are sealed. The pupae shrivel up so they may be easily shaken out of their cells, of whichappings show a large perforation, with rims cocked up. The pupae are not dried up nor modified in color, in fact, the bees pull them out of the hive and, as no hatching takes place, the colony dwindles rapidly. The queen, however, keeps laying, and even several eggs are sometimes to be seen in the same cell. The larva seem, ordinarily, not to be suffering before they are capped over (except in very bad cases, when they are also thrown out of the

hive.) The disease seems very contagious, as all the hives in an apiary may be affected. In rare colonies it cures by itself, but in most cases it causes sad havoc. Transferring bees from skeps to modern hives in such apiary is sure to result in diseased brood in the new hive. I must add that there is no disagreeable stench, and I have found none of it in a sample sent me. Such disease is not described in our modern books. Ancient authors like De-beauvoys and Hamet mention it in their writings, but do not seem to consider it very serious (though Hamet-Sevalle says it might result in foulbrood).

FRANCE.

ANSWERS.—1. Introducing a queen very late in the season may be the same as at any other time, except in one particular. When it is so late that you no longer expect brood to be reared, then you can allow the queen to remain caged in the hive 3 or 4 days, or even a week, before allowing the bees to release her. This longer time of allowing the bees to get acquainted with the queen—or allowing the queen to get the colony odor—will make the introduction safer.

I don't think any ill results would come from ridding the colony of the older bees, even late in the season, by moving it away, leaving a frame of brood in a hive on the old stand to catch the returning field bees. Instead of putting it on a new stand, I would proceed in this way: Set on the old stand a hive containing one or more combs (with brood in one of them, if brood is to be had), then on top of this put the hive of combs and bees. Of course this top hive has its bottom-board, so that there is no communication between the two stories. In a few days, when the queen is well introduced, all may be put together in the lower story.

2. Each of these methods is successful in the hands of some, while others do not succeed.

3. I'm not an expert on bee diseases, and don't dare advise. If you send a sample of diseased comb to Dr. E. F. Phillips, Washington, D. C., you may get the desired information.

Packages vs. Nuclei

1. Which would you consider better in my climate, to buy about May 15 for increase, 2-pound packages at \$5, or 3-comb nuclei at \$6?

2. Will bisulphide of carbon be satisfactory to kill a swarm of black bees lodged in the walls of a house? Sulphur has had no effect upon the bees, the cavity being so deep.

3. Will sweet clover seed itself down year after year if it is planted in waste places and roadsides?

4. What is a good way to transfer a colony in a Danzenbaker hive to a 10-frame Langstroth without cutting the combs?

5. Do bees ever seal honey before the cells are full, as in case of a fall flow, where there is not enough honey left to fill them up?

6. Can I get combs built from full sheets of foundation in the fall by feeding a little thin syrup every day?

NEW JERSEY.

ANSWERS.—1. Perhaps the nuclei.

2. As you say the cavity is deep, that sounds a little as if the entrance is at the top of the cavity. In that case the bisulphide should work better than the sulphur, for the fumes of the sulphur rise and those of the bisulphide fall. If you use enough of the bisulphide and keep it closed tight, not opening for 24 hours, it may succeed.

3. Yes, but it yields seed only in its second year; so, if you want it to bloom each year it must be sown two years at start.

4. I don't know of any way unless it be to get a set of combs, Langstroth size, or frames filled with foundation, and brush the bees upon these. Then you could put on this an excluder and the old combs on top for the brood to hatch out.

5. I don't think they ever do.

6. No; you would have to feed a good deal, unless the bees were gathering, and if they were gathering enough you would not need to feed at all.

Packing—Bees Dying on Snow—Old Comb

1. Our hive covers are 6 inches deep. Will a gunny sack filled with wheat straw, placed in the cover make a good packing above the frames, absorbing the moisture, etc?
2. May the sack of straw be allowed to rest directly on the top-bars?
3. Would it be well to place paper on top of the sack?
4. Last winter a number of bees would come out of the hives, carrying dead bees; alighting on the snow, they would become numbed and freeze. Were the hives too warmly packed, or should the snow have been cleared away?
5. When bees begin to tear down old comb and build in new in patches, should the old comb be replaced with foundation?
6. Do the bees use the old wax from such combs over again?

MISSOURI.

- ANSWERS.—1. Yes; leaves would be much better.
2. It would do all right, except that the bees will gnaw holes in the sack. So there should be something for the bag to rest on in the way of a thin board covering, but not entirely close, or else some kind of cloth.
3. It would not make such a great difference, but still might be of use. Paper is good to stop air currents.
4. Sweeping the snow away for a few feet, or covering it with straw or something else would have been good. Even tramping the snow would help, as it is the softness of the snow that makes the trouble, the bees sinking down into it.
5. I don't know that bees ever tear down comb merely because it is old, but because it is objectionable in some way. Anyway, if only a small spot appears objectionable, it may be patched with foundation, or, still better, with drawn-out comb. If the whole comb is bad, as it may be when left for a long time out of the care of the bees, then it should be replaced with a new frame of comb or foundation.
6. Not as a rule, although I'm not sure but they sometimes use it in preference.

Royal Jelly—Transferring

1. What is royal jelly and what color it it?
2. Where is royal jelly found?
3. How much is needed to rear a queen?
4. What is best to do, let bees swarm, or use Alley trap to keep them from swarming?
5. I had to transfer some bees from a box-hive; I used the drumming plan, and, to my surprise, they wouldn't drum out at all. I will tell you how I went about it, and my question is, tell me where I made my mistake? I put an empty box on top of the old box-hive, but first I smoked them good and turned it upside down, then I started drumming, and I drummed about an hour; did not drum a bee out of it.
6. After transferring I found it necessary to feed them. I fed with a division-board feeder. Soon after I fed them they made quite a noise around the front of the hive. There was no robbing or fighting; but why did they make that noise?
7. If bees are left out of doors in winter should they have an extra cover over them?
8. Should each hive have a cloth cover between the frames and top, or does it make any difference?
9. Which pays the best, extracted or comb honey?
10. Do you know where I could get some basswood trees? If you do, give the address.

ILLINOIS.

- ANSWERS.—1. It is the food given to the larvæ which are to be reared as queens, and in color and consistency looks much like thick cream.
2. In queen-cells.
3. I don't know. In a queen-cell about to be sealed you will find as much as the size of a pea; but it is not all used by the larva, for when the young queen emerges from the queen-cell you will find quite a portion of it left in the cell, dried into a stiff jelly, quite a bit darker than when fresh.
4. For you it will probably be better to let them swarm. The Alley trap does not pre-

vent swarming; only catches the queen when the bees swarm. Then the swarm returns, only to swarm again if nothing is done.

5. Likely you did not drum hard enough. You must drum hard enough so the bees will say, "This place is going all to pieces; better we climb out as soon as possible."
8. It was because the bees were excited.
7. Yes.
8. Many use no such cloth, but have only a bee-space between the top-bars and the cover.
9. Extracted, generally speaking.
10. Try any nurseryman.

Strange Behavior

I have had a peculiar experience with an Italian queen. She was with 2 pounds of bees and she soon had a fair colony, but one day I noticed quite an uproar among my bees. I soon saw quite a lot of bees entering another hive, and bees all around fighting, and many dead. I stopped the entrance. I soon saw a bunch of bees near the entrance of the hive, and when I brushed them apart the queen was there. I picked her up and put her in her own hive and put a queen-cage over the entrance. A short time after that I noticed quite a disturbance around another hive and noticed the queen with almost all of her colony near the entrance of that hive, which was a double hive, and not knowing it was the same queen, I took off the upper hive and set it aside and put her in the lower hive. I soon discovered she was the same old queen. I then took the hive and brood she left and put it in the hive she was in. I would like to know what was the cause of the trouble. She had plenty of brood and of honey.

IOWA.

If I had been on the spot to see the whole performance, maybe I could have told what was the trouble, and maybe I couldn't. It looks a little like regular swarming, the bees foolishly trying to enter other hives. Sometimes they do that way.

Transferring Bees in Georgia

By F. M. Baldwin.

Mr. J. O. Hallman, who was with J. J. Wilder of Cordele, Ga., last season, is setting up for himself. He uses 8-frame hives and runs for chunk honey. Cypress dressed on both sides is bought by the car load and cut on a small power saw as he has time and his needs require.

His yards are scattered over a radius of 25 miles and he uses a one-ton Maxfer truck in visiting them. Bees were bought where he could find them in reach of his home yard. Many of them were in old-fashioned gums, but he also found a goodly number in L. hives at a reasonable price. He has over 200 colonies.

The roads are fairly good, only one yard being off the main thoroughfare. This yard is the farthest to which he has to go, being a few miles beyond Rhine, on the Seaboard railway. He has only about two miles of bad road in this journey.

There were 35 gums in the home yard, four of which swarmed and were hived on full sheets of foundation in 8-frame Langstroths. Most of these old gums are made of inch and a quarter lumber, the outside measure being 12x18½ and 12 inches deep. They are an attempt at a movable frame. Cleats are fastened on the inside of the ends of the box and five frames made of plastering lath are hung on them. No attempt is made to keep the combs straight. But in the super, which is six inches deep, full sheets of foundation are fastened in the five lath frames, the

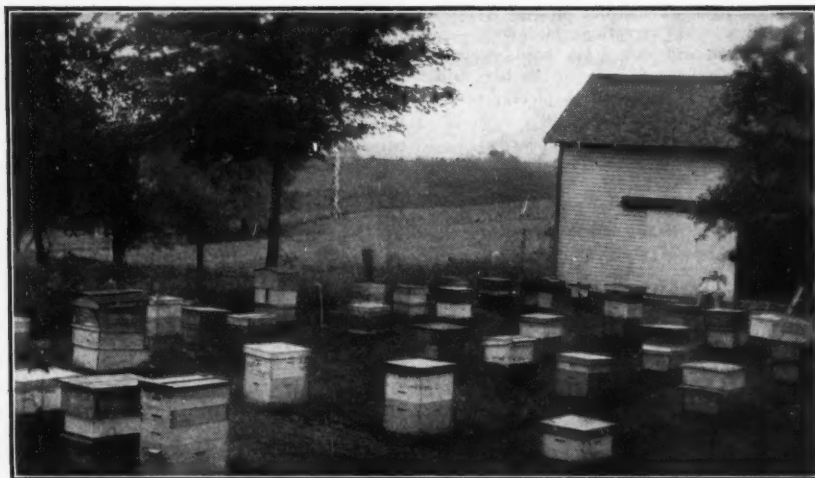
plan being to have straight combs for the chunk honey trade of the neighborhood. The space between the top-bar of the hive and the bottom-bar of the super is rather more than an inch and is usually full of brace combs when the super is removed. I believe Mr. Hallman bought 30 of these and five of the long, slim gum, so dear to the hearts of our fathers. These have been brought to his home and are about 50 feet west of the factory, in a long, straight row near the fence that separates this yard from the house.

The gums are on the ground and a one-story L. hive is set on top. This is filled with foundation wired in the frames. If there was any honey in the super it was put on top of the new hive as a bait to draw the bees into the new hive. When there was no old super with surplus left over from last fall a bait comb was used as soon as it could be spared from a hive in which the bees had been industrious enough to start work above the brood-chamber.

No attempt will be made to confine the queen to the new brood-chamber. She will be allowed the freedom of the whole hive. About the first of October, or as soon thereafter as brood rearing is reduced to the minimum, the old box is to be taken from under the new hive and torn to pieces; whatever honey and wax may be found in it will be cared for and the bees will then be in modern hives. Of course, they will be given a good smoking from the bottom to drive the queen up if she is down below before the bottom is disconnected from the top. Mr. Hallman used this method of transferring when he was with that most extensive of all our beekeepers, our friend J. J. Wilder, of Cordele, who has 5,000 colonies in some 75 yards of southern Georgia and northern Florida. Most of Mr. Hallman's bees are the black kind, and he does not plan to Italianize them at present. They are industrious and doing well. Two hives are worth careful attention. The treatment in their case is different. They have been turned down on the side, a 3-inch strip removed from the upper side to make a good-sized opening, and an 8-frame L body set over the opening. Then a board is nailed on the bottom to close up that big open space, leaving as much entrance as may seem desirable.

The above plan cuts out a lot of muss and leaves the actual work of transferring largely to the bees themselves.

Perhaps a word as to the probable flow at Helena and through this section of South Georgia may be in order. Our work begins with maple in January. Fruit bloom and chinaberry carry us to poplar in March and April. Gallberry begins before poplar ends. In the summer we expect nectar from cotton and in October and late September the fields are full of what I think is burr-clover. Just what the average crop in the neighborhood will be under modern management is a matter of guess, as no one has tried it out.



Apiary of H. M. Leach & Sons, Hiram, Ohio.

Gates to Ontario

Dr. Burton N. Gates has resigned his position at the Massachusetts Agricultural College at Amherst, to become Provincial Apiarist of Ontario. He succeeds Morley Pettit, who recently resigned to devote his entire attention to his commercial apiaries. Doctor Gates has been a prominent figure in the beekeeping world for some time. He was formerly a member of the apicultural staff in the U. S. Department of Agriculture and later head of the beekeeping department at Amherst. An extended announcement by Mr. Pettit will appear in a later issue of this journal.

Australian Surplus.—According to the Australasian Beekeeper there is a large surplus of honey still waiting for shipping space for export to Europe. There is said to be a surplus from this year's crop in New South Wales alone of two thousand tons. The total available from Australia is estimated at from three to four thousand tons. The better organization of New Zealand beekeepers is given by another journal as the reason for their better success in getting their product to market.

Value of Co-operation.—The New Zealand Co-operative Honey Producers' Association announce that they have a good selling organization in Great Britain and that they have secured a guarantee of a minimum net price of 15 cents per pound to their members for a period of three years following the war. This is nearly double the guaranteed price previous to the war. To beekeepers who have to go half way round the world to get to market a guarantee of 15 cents net for their product for three years after the war is very good. This is a striking instance of the value of organization. Just now our American beekeepers are profiting by the foreign demand, but unless they can get together and act in harmony they will soon find that the beemen of other countries have captured the

foreign market when the war is over. Now is a mighty good time for the beekeepers to organize and prepare to offer their crops together. Organized beekeepers are getting, even now, higher prices than the unorganized ones are getting. A total of several carloads attracts the big buyer, who cannot be tempted by the small offering of a single beekeeper. Colorado beekeepers set the example, but other States are rapidly falling into line. Idaho, Texas and now California, are getting well organized.

Honey for the Boys at the Front.

According to the New Zealand Beekeepers' Journal, honey has been collected for shipment to their boys at the front, under direction of the Red Cross. Approximately five tons were sent, the packing being superintended by Mr. L. Bowman, who was formerly Government Apiarist at Christchurch. Since many of the boys write that they miss the sweets which they have been accustomed to, the honey should prove acceptable.

Classified Department

Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEEES AND QUEENS

FOR SALE—About 90 colonies bees at four fine locations, small auto truck and lot of empty hives and supers. J. W. Seay, Lancaster, Texas.

FOR SALE—Three-banded and Golden Italian queens; tested \$1.25, select tested \$1.50, each. Also 140 hives bees and equipment. If interested, write. C. H. Cobb, Belleville, Ark.

FOR SALE—Bees in 10-framed hives spaced 9 frame to the colony, each \$10. F. J. Rettig, Wabash, Ind.

FOR SALE—22 colonies in fine shape for winter, together with supers and extracting equipment. Priced to sell. Goodwin Dahlen, R. 1, Harmony, Minn.

FOR SALE—Three-banded Italian queens; untested, one, \$1; six, \$5; twelve, \$9. Tested queens, \$1.50 each. Rob't B. Spicer, Wharton, N. J.

FOR SALE—125 8-frame, one-story colonies, extra fine honey-gathering strain Italian bees, at \$6 per colony, all free from disease, with stores for winter, and about 500 extracting supers built from foundation, and some empty supers and extra bottoms and lids, all in first-class condition, at proportionately low price, f. o. b. station. W. C. Meirotto, Council Bluffs, Ia., Route No. 2.

ITALIAN QUEENS—Northern-bred, three-banded, highest grade, select untested, guaranteed, queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, one, \$1; twelve, \$10; fifty, \$35. Send for circular. J. H. Haughey, Berrien Springs, Mich.

NO MORE QUEENS this season. Root's beekeepers' supplies. A. W. Yates, 3 Chapman St., Hartford, Conn.

FOR SALE—Northern Bred Italian Queens; hardy, prolific goldens, each, \$1; six, \$5. Allen R. Simmons, Claverack, N. Y.

BEEES AND QUEENS from my New Jersey apiary. J. H. M. Cook, 1Atf 84 Cortland St., New York City.

GOLDENS that are true to name. Untested queens, \$1; 6, \$5; 12, \$9; 50, \$35; 100, \$67.50. Garden City Apiaries, San Jose, Calif.

THREE-BANDED ITALIANS ONLY—Untested queens, each \$1; 6, \$5; 12, \$9; 50, \$35; 100, \$67.50. H. G. Dunn, The Willows, San Jose, Calif.

SWARTS GOLDEN QUEENS produce golden bees of the highest qualities; satisfaction guaranteed. Mated \$1. 6 for \$5; tested \$3. D. L. Swarts, Lancaster, O., Rt. 2.

GOLDEN QUEENS that produce Golden workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, \$1 each; tested, \$2; breeders, \$5 and \$10. 2Atf J. B. Brockwell, Barnetts, Va.

QUEENS—H. D. Murry's strain of 3-banded Italians; reared by the Doolittle method. Prices untested, 1 for \$1, 6 for \$5, 12 for \$9. No disease. Safe arrival and satisfaction guaranteed. O. D. Rivers, Route 4, Honey Grove, Texas.

FOR SALE—Colonies of extra fine strain Italian bees, with select tested queens, in new 1-story 8-frame single wall-hives, standard full-depth, self-spaced Hoffman frames, \$10 each, f. o. b. here. The bees are free from disease. Wilmer Clarke, Earlville, Madison Co., N.Y.

FINEST ITALIAN QUEENS, June 1 to November, \$1 each; 6 for \$5. My circular gives safe methods; free. J. W. Romberger, 3113 Locust St., St. Joseph, Mo.

THREE-Banded and Golden Italian Queens and pound packages from the Sunny Southland. Grant Anderson, Rio Hondo, Texas.

FOR SALE—Pure 3-banded Italian queens, as good as you can buy with money, from June 1 to September 1. J. F. Diemer, Liberty, Mo.

REQUEEN with Simmons's Italians; bred for business. Each, \$1; six, \$5. Allen R. Simmons, Claverack, N. Y.

HONEY AND BEESWAX

WE are in the market for honey and beeswax. Send best price on comb honey and sample of extracted honey. State quantities you have, also style, size and weight of package or section. Charles Israel Bros. Co., Inc., 486-490 Canal St., New York.

WANTED—Shipments of old comb and capings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

WANTED—White or light amber extracted honey in any quantity. Kindly send sample, tell how your honey is packed and your lowest cash price; also buy beeswax. E. B. Rosa, Monroe, Wis.

QUICK CASH for comb or extracted. Send sample and say how packed, how much and price. Bruner, 3836 N. Kostner Ave., Chicago.

CASH paid at your bank for carlots and less, of comb and extracted honey.
Wesley Foster, Boulder, Colo.

WANTED—Comb, extracted honey, and bees-wax
R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

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SEND TODAY for samples of latest Honey Labels. Neat, attractive labels at lowest prices. Catalog free
Liberty Pub. Co.,
Sta. D, Box 4-H, Cleveland, O.

WANTED

CASH for extracted honey, white and amber, in 10-pound cans.
Thomas Lang,
1572 N. Halsted St., Chicago, Ill.

WANTED—Barnes No. 4 circular saw.
Otto Bender, 2813 Osceola St., St Louis, Mo.

WANTED—A good honey location to start a line of apiaries; will give a suitable reward for the best reliable information.
D. E. Lhommedieu, Colo, Iowa.

WANTED—White sweet clover seed; send sample; state quantity and your lowest price in first letter.

Dadant & Sons, Hamilton, Ill.

WANTED—Your old combs, cappings or slum-gum to render into beeswax by our high steam pressure wax presses.

Dadant & Sons, Hamilton, Ill.

WANTED—Second-hand honey extractors; tell me what you have and price; also wax presses.
W. D. Soper, Jackson, Mich.
Dealer in all kinds of Bee Supplies.

WANTED—Samples of honey from the different plants for our office collection. We will pay for the honey and send a parcel post can for mailing. Samples to be of value should be from one kind of flowers only and unmixed with honey from other sources, as nearly as possible. A pint will be sufficient for each kind, but we wish to secure samples of the same kind of honey from several widely separated localities.

American Bee Journal, Hamilton, Ill.

FOR SALE

FOR SALE—Three hundred, 8-frame extracting supers, painted white, filled with good combs, mostly built on full sheets of foundation, full depth Hoffman frames, seven frames for extracting; no disease, \$2; 200 8-frame hives, \$2.50.
Chester E. Keister,
Clarno, Wis.

FOR SALE—40,000-lb. car of white extracted clover-alfalfa honey; state best offer, f. o. b. Hardin, Mont., in first letter. Sample if wanted.
S. F. Lawrence, Hardin, Mont.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEAUTIFUL FARM HOME—Improved, rich soil, well located, good buildings, 100 colonies of bees, up to date, best honey-producing location in State; not crowded; average for past seven years 105 lbs; 5 acres of ginseng golden seal, all ages, in fine shape. One-half artificial shade, one-half natural. Price \$80 per acre; \$7,000 for farm and bees, 150 extracting supers with combs, 100 excluders, 2-frame extractors, 3 large honey tanks, 150 shallow supers. Terms, \$3,000 cash, balance on time. Will sell a part or all. A wonderful opportunity; a bargain. Poor health reason for selling.
W. M. Penrod, Ronneby, Minn.

FOR SALE—Good second-hand 60-pound cans, two cans to the case, at 60 cents per case f. o. b. Cincinnati. Terms, cash with order.
C. H. W. Weber & Co.

Cowan Extractor, \$18; white leghorn cockerels, \$1; fox terrier puppies, \$2.
Lorenzo Clark, Winona, Minn.

FOR SALE—35 Thale bee feeders, new, \$10.
Mason, Mechanic Falls, Maine.

YOU can make your own comb foundation and earn big money making it for others. New, easy, rapid process. Machine and all apparatus complete, with full instructions, \$100. Wax worked on shares or for cash.
J. J. Angus, Grand Haven, Mich.

QUEENS THAT WILL PLEASE

OVER 20 YEARS OF CAREFUL SELECTING AND BREEDING

GUARANTEE

You take no risk in buying my Queens, for I guarantee every Queen to reach you in first-class condition, to be purely mated, and to give perfect satisfaction.

They are bred from **Imported** stock. The very best bees for honey gathering and gentleness. They are not given to swarming and are highly resistant to disease. Give me your order and if, after you have given my queens a fair trial, you are not satisfied in every way that they are as good as you have ever used, just return them and I will send you queens to take their places or return your money with any postage you have paid out on returning the queens.

	1	6	12
Untested	\$.75	\$4.25	\$8.00
Select Untested	1.00	5.00	9.00
Tested	1.50	8.75	17.00
Select Tested	2.00	11.00	20.00

Untested, \$60 per hundred.

L. L. FOREHAND : : FORT DEPOSIT, ALA.

"Practical Queen-Rearing"

Is the title of the new bee book, cloth bound, 100 pages, which has just been written by Mr. Frank C. Pellett, who is well known to our readers.

For many years there has been a demand for a book which would give in concise form the many different methods of queen rearing, as the Doolittle, Pratt, Dines, Miller, Alley and others with variations as practiced by different large breeders.

You have this in the new book which is just out. Send for your copy now and get informed as to your best method of rearing queens from your best colonies. Good pointers in it also for the large beekeeper and veteran queen breeder.

Price, postpaid, only \$1.

By special arrangement we can offer it and a year's subscription to the **American Bee Journal** for only \$1.75.

(Canadian orders 15 cents extra.)

AMERICAN BEE JOURNAL, Hamilton, Illinois

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W. S. S. COST DURING 1918			
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		Oct.	\$4.21
		Nov.	4.22
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W. S. S. WORTH \$5.00 JANUARY 1, 1923

Crop Report and Market Condition

Compiled by M. G. Dadant

For our October report we have asked our reporters to write us a brief summary of about the size of crop secured, demand for honey, whether bees will need feeding for winter, condition of honey plants, and honey prices.

THE HONEY CROP

In the New England States, Maine reports about 40% of last year, with other States reporting about the same as last year, with the exception of Connecticut, which has more honey than in 1917.

In New Jersey, the crop is very small, and New York expects a total of from 50 to 75% of last year. Spots in this State report a full crop, with others much under last year.

Ohio has more honey than in 1917, averaging about 50 pounds per colony for those reporting.

The South is hardly up to last year, though likely up to the average of a five-year period, since last year was above the ordinary. Louisiana is the exception, with very little surplus, with Tennessee about 50% of last year, and Kentucky normal.

Indiana, Illinois, Missouri and Southern Iowa have had near a failure, much of the short crop being due to severe drought, which cut off the white clover in spring and spoiled any chances of a fall crop. With our own bees, we moved 300 colonies from 20 to 35 miles to get them in the Mississippi bottoms to avert a famine. Last examinations reveal that they have filled their brood-chambers well, and may make enough surplus to pay for the haul, which was done by trucks.

Michigan had a poor spring crop, followed by a very good fall flow in some localities. It is certain, however, that the crop will be far below the total of 1917, and one large dealer reports that very little Michigan honey will be sold outside of Michigan.

Wisconsin has had as near a failure as possible. Practically all reports are uniform, except a few in the northern part of the State.

Minnesota's crop is poor, averaging hardly 20 pounds per colony. South Dakota is the same, except in the southeastern part, or sweet clover section, where the crop was fine, as it is in the sweet clover section of western Iowa and eastern Nebraska and Kansas.

Texas will certainly not have over 25% of a crop, but even this will be more than the failure of last season. The irrigated sections of New Mexico and Arizona have had almost a normal crop.

Colorado reports close to normal crop, as do Utah and Wyoming, while the reports from Montana are very good, and from Idaho and Washington, far above last year.

California will have about half a crop.

Taken all in all, the crop will not equal that of 1917, which was below normal.

FEEDING OF BEES

Roughly speaking, bees will need feeding in all localities where the crop was a complete or near failure this year, and this means some feeding in New Jersey, parts of New York, Indiana, Iowa, Illinois, Wisconsin, parts of Michigan and Minnesota, Louisiana, Texas, Missouri and possibly some in California.

CONDITION OF PLANTS

The condition of plants varies, especially in the white clover region. Some of the States which show the effects of the drought most are Indiana, Illinois, Wisconsin, Southern Iowa, Missouri and parts of Texas. Copious rains in some parts of these areas have tended to make the outlook a little better for the clover, but conditions are far from roseate.

HONEY DEMAND AND PRICES

Everywhere, without exception, the demand for honey is extremely good. Many reporters are selling to their local trade at about the same figures that they could get by shipping their honey all in one lump to the larger dealers in the big cities, very likely because they want to hold their local trade and are entirely satisfied with the prices obtained.

Retail prices for honey, the country over, vary from 25 to 50 cents, depending on the container and on the attitude of the seller.

Wholesale prices obtained by the beekeeper vary from 22 to 25 cents for extracted and from \$6 to \$7 per case for comb, depending on quality and freight rates to the largest terminals. Not a few of the reporters had been offered 25 cents for white extracted, a price for which they had been holding since their honey was ready for market, and several are holding for even a higher price.

It is certain that anyone wanting to sell can get rid of his honey crop at a price of 25 cents f. o. b. Chicago or New York.

To show the hungry demand for honey, we quote from the report of a Missouri correspondent, a big beekeeper who has developed a large local trade and must find honey this year to fill orders. He says:

"The honey prices here are gone plumb crazy, or maybe it is the beekeepers. I am retailing extracted honey for 30 cents—could get 40. Six hundred pounds I bought got here September 7—all gone in two days. I have to hide from my old customers; but I will take off 4,000 pounds or more soon, and can then face them again for about five days. After that I will take a little trip, as I can't buy any more. No, I can't take a trip, because we must save gasoline—guess I will buy a rope."

The export demand is still good, and with the present activity all honey will probably be sold and into the hands of the consumer, or the hands of the big buyer and wholesaler by the time Christmas vacation comes.

KEEP INFORMED ON TEXAS CONDITIONS

The **Beekeepers' Item**, a monthly paper edited by Mr. Louis H. Scholl, well known to our older readers, and an authority, has many interesting items which should interest beekeepers, not only in the Southwest, but throughout our country.

In order to allow you to become acquainted with this paper, we offer a special combination of **Beekeepers' Item** one year with **American Bee Journal** for only \$1.25.

Or, if you desire, we can send you your choice of **First Lessons in Beekeeping**, or **Practical Queen Rearing** with the **Item** one year for only \$1.25.

Send all orders to
AMERICAN BEE JOURNAL
HAMILTON, ILL.

Texas Queens

No more bees in packages, but queens galore from June 1 to October 1. Untested, 75c each, \$8 per doz.; tested, \$1.25 each, \$12 per doz. I have the Three-banded Italians and Golden Italians; very choice stock.

GRANT ANDERSON,
Rio Hondo, Texas.

Weis Fibre Containers FOR EXTRACTED HONEY

Neat, clean, leak-proof, and inexpensive. Especially adapted for home market.

Send for prices. Samples, postpaid, 15c in stamps.

M. H. HUNT & Son, Agents
LANSING, MICHIGAN

Don't stop advertising. because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.



Price of 1,000 gummed, 35c.

American Bee Journal, Hamilton, Illinois

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to **American Bee Journal** at \$1.00.

Attention Eastern Beekeepers

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Lewis Beeware and Dadant Foundation

We are located on a main line of the New York Central and the West Shore, as well as branches of the Pennsylvania and Erie Railroads; also the Rochester & Syracuse Electric Line, which assures prompt delivery. Parcel Post orders receive prompt attention.

Five and ten-pound pails, also five-gallon cans and glass jars.

Queens, three-banded and Golden Italian, ready for delivery now. Untested, \$1 each; 6 for \$5.50; 12 for \$10; tested, \$2; 6 for \$10.

Safe delivery guaranteed, dead queens being replaced upon their return.

THE DERROY TAYLOR CO.
Newark, New York

Golden Italian Queens

RUSTBURG, VA., R. No. 3, March 18, 1918.

Mr. Ben G. Davis:

Dear Sir—Please find enclosed \$5, for which please send me the very best Golden Queen you can for the money. If you can't ship her at once, please notify me. I ordered one from you 3 years ago last fall that was the best I ever saw. Her bees stored 320 pounds of comb honey the first year. I have several of her daughters that are fine.

Hoping to get a good one again, I am yours truly,

J. W. LAWRENCE.

PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	\$1.50	\$ 7.50	\$13.50	\$1.25	\$ 6.50	\$11.50	\$1.00	\$ 5.00	\$ 9.00
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00
Select Tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	12.50	25.00

No Nuclei or Bees by Pound.

Safe arrival, purity of mating and satisfaction guaranteed.

Queens for export will be carefully packed in long distance cages, but safe delivery not guaranteed.

BEN G. DAVIS : : Spring Hill, Tenn.

Read "THE BEEKEEPER"

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick.

Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

Price, postpaid, \$1 per year.

United States, \$1.25.

Foreign, \$1.50

Send for a free sample copy.

The Horticultural Publishing Co., Ltd., Peterboro, Ontario

Mr. Beekeeper:

Increase your honey crop by giving the bees all the super room that they can fill. We will help you by furnishing you with fixtures ready for use, at the lowest prices. Hives and supers, nailed and painted; frames, wired and filled with full sheets of foundation; sections, filled with foundation, can be shipped on short notice. The LEWIS LINE is in the lead with the live honey producers.

WESTERN HONEY PRODUCERS
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CANS AND SHIPPING CASES

We have a fine stock of Five-Gallon Cans and Shipping Cases; also Comb Foundation, Extractors, Honey Tanks, etc. Quick shipments.

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Quality ... Service

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LEUTZINGER & LANE

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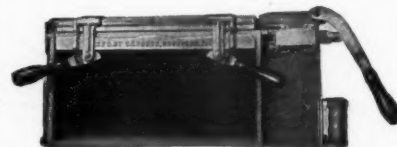
Western Beekeepers Attention

We pay spot cash for Honey, and do not handle on commission. Write us what you have, or expect to have, to sell. We buy any quantity.

Write for Price List and
Booklet descriptive of

**HIGH GRADE
Italian Queens**

JAY SMITH
Route 3
Vincennes, Ind.



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C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Does the work in half the time. Has been tried and is guaranteed to do accurate work. Makes the frames ready in one handling. Price \$6.50. Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

MOTT'S NORTHERN-BRED ITALIAN QUEENS

that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans on "How to Introduce Queens and Increase," 25 cents. List free. Untested \$1 each.

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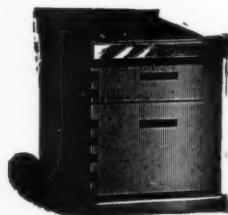
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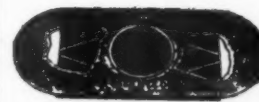
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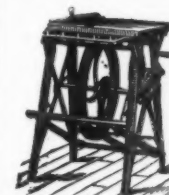
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